

## **SCHOOL HEALTH PROGRAM**

# **SCHOOL HEALTH PROGRAM**

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## PREFACE

In 1924, the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association made this statement: "Every prospective teacher when not specializing in Health Education should be required to take one course where the health program as a whole is considered, synthesis indicated, and methods of securing the standardized results are discussed." This text is written for prospective teachers and teachers on-the-job, in the hope that the total school health program can be understood and the relations existing among school health services, healthful school living, health education, and the organization and administration of the health program can be accepted.

When the total school health program is understood and when the relations existing among the parts of the health program are emphasized, the subject matter of health education and the reasons for the selection of the subject matter become clarified. The breadth and depth of health education, as a single subject-matter field, become apparent when the total school health program is accepted, synthesis of its related parts is present, and methods obtaining desired results are used.

From the total school health program the teacher can discover the pupil health needs and the community health problems. These needs and problems are the basis for the selection of the health education subject matter. The total school health program provides the "why" and "what" of health education as a single subject-matter field in the elementary and secondary schools.

There are prospective teachers and teachers on-the-job who look on health as anatomy and physiology, social studies, physical education, or general science. As long as teachers are not aware of the basic pupil health needs and community health problems that the school health program reveals, health becomes a repetition of meaningless generalities.

To illustrate these comments, a school health educator, with many years of health education teaching and supervisory experiences, was invited by a large metropolitan school system to evaluate curriculum guides in

health for the system's elementary schools, junior high schools, and high schools. Before attempting an evaluation of the curriculum guides, the school health educator compiled extensive data on pupil health problems recorded by physicians and medical specialists, dentists and dental hygienists, and nurses of the school system's *school health services*. Surveys of school sanitation conditions and accident hazards, as well as comments from lunchroom managers, disclosed additional pupil data, on *healthful school living*. The local health department, in turn, provided invaluable information on the *community's health problems*. The state health department, state divisions of nonofficial health agencies, and research by school and public health educators likewise revealed data on pupil health needs and community health problems. When the school health educator compared the known pupil health needs and the existing community health problems with the health curriculum guides, there was little evidence that the health education subject matter provided for these needs and problems. Rather, the health curriculum guides contained superficial, out-of-date generalities repeated from grade to grade, and believed to be health. Teachers, supervisors or consultants, and principals of this metropolitan city school system admitted that they were not aware of the total school health program and the relations existing among its parts.

In this edition, the text of *School Health Program* has been rewritten and reorganized. Four parts of the health program are presented: School Health Services, Healthful School Living, Health Education, and Organization and Administration of the School Health Program.

Some of the outstanding features of the revised edition are historical development of the school health program; recent health appraisal techniques; periodontal diseases and other dental health problems; nonremediable health conditions; diseases common to all school-age students; pupil illnesses and injuries reported in emergency care procedures; guidelines to school lighting and furniture; obesity in pupils, food faddism, and school nutrition; health problems of school personnel; health education competencies adapted to the pupil's growth and development; sources to discover the pupil health needs; health education curriculum, grades 1 through 12; areas and units of health education; educational television as a method of health education; responsibilities of school and community personnel in the total school health program; evaluation of health services, healthful school living, health education, and the total program.



information contained in the school health program. School nurses, physicians, dentists, and dental hygienists, who will appreciate the scope of health problems presented, can also use it. Elementary and secondary school classroom teachers, principals, supervisors and consultants, and superintendents of schools will find it helpful in any in-service health education workshop. Community voluntary health agencies, local and state departments of health, and professional groups can also use the text to extend their services. All these groups will find helpful the References for Further Study at the end of each chapter.

The author's twenty-five years of school health experiences, her publications, and her research have aided in the preparation of the rewritten and reorganized edition of this text. It is hoped that elementary and secondary school personnel, using this text, will become aware of the need for *total* school health programs.

Sincere appreciation is expressed to Dr. Harold M. Childs, Springfield College, Massachusetts. Dr. Childs critically reviewed the revised edition and gave helpful comments.

Permissions were granted to the author by the Oral Medicine Department, University of Pennsylvania; Texas State Department of Health; State Education Department, the University of the State of New York; American Medical Association; American Dental Association; National Congress of Parents and Teachers; and National Society for the Prevention of Blindness.

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JESSIE HELEN HAAG

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## **SCHOOL HEALTH PROGRAM**

## INTRODUCTION

The modern school health program can provide the best justification for health education in the elementary and secondary schools. This justification is revealed when the adult accepts his responsibilities in promoting individual and community health. This acceptance of the adult's responsibilities is a process developed within the elementary and secondary schools through health education and well-coordinated school health programs.

The school health program has been defined as "... three interrelated parts, namely, healthful school living, school health services, and health education."<sup>1</sup> In 1961, an investigation of school health practices in the United States revealed very little evidence of *total* school health programs with emphasis upon health education as a *single subject-matter* field.<sup>2</sup> The American School Health Association has disclosed that very few teachers of health education are prepared each year.<sup>3</sup> In many schools, health education has been assigned to school personnel with inadequate preparation in health education and with little interest in the total school health program.

No other phase of the elementary and secondary school has as much support of the health professions as the school health program has. The history of the American school health program reveals the dedicated efforts of educators, physicians, nurses, dentists, public health personnel, and professional leaders in the official and nonofficial health agencies.

<sup>1</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education* (5th ed.). Washington, D.C.: National Education Association, 1961, p. 6.

<sup>2</sup> *School Health Practices in the United States*. Washington, D.C.: American Association for Health, Physical Education, and Recreation, 1961.

<sup>3</sup> Committee on Professional Preparation in Health Education, American School Health Association. "Recruitment, Enrollment, and Placement of Health Education Majors." *Journal of School Health*, 30:221 (June 1960).

## HEALTHFUL SCHOOL LIVING

The historical development of healthful school living began in 1829 when William A. Alcott indicated the importance of improving school buildings. In 1837, Henry Barnard published an essay on health conditions found within school buildings. In the same year, school hygiene was discussed by Horace Mann in his first report to the Massachusetts Board of Education.<sup>4</sup> The Los Angeles Board of Education, in 1880, requested school personnel to be aware of classroom ventilation and temperatures.<sup>5</sup> The 1920 White House Conference on Child Welfare Standards gave significant statements concerning healthful school living.<sup>6</sup> The 1930 White House Conference on Child Health and Protection indicated that healthful school living was the most important phase of education. Recommendations were made regarding environmental factors and the school day. Lighting, heating and ventilation, water supply, and toilet and shower room facilities were some of the items considered necessary to healthful school environment. Planning activities, arrangement of the curriculum, and discipline were some of the items mentioned in the school day.<sup>7</sup> "Hygiene of the environment" and "school hygiene" were replaced by the term "healthful school living" in 1934.<sup>8</sup> Differences in desirable and actual conditions of healthful school living were presented at the 1940 White House Conference on Children in a Democracy. More comprehensive statements about healthful school living were made at the 1940 conference than at previous White House Conferences. Daily school meals were stressed both for educational and dietary values.<sup>9</sup> The Mid-Century White House Conference on Children and Youth discussed healthful school living in detail, involving environmental factors, school nutrition, and the school day.<sup>10</sup> The 1960 White House Conference provided optimum standards for lighting, heating, ventilation, cooling, and other environmental factors; school nutrition; and factors related to the school day.<sup>11</sup>

The health of the teachers was emphasized in a report by James Frederick Rogers in 1926. This was the first attempt to stress the importance of the teacher's health as a part of the school health program.<sup>12</sup> Later in 1938 and 1957, the health of the teacher was the main topic in the publi-

<sup>4</sup> Richard Means, *A History of Health Education in the United States*. Philadelphia: Lea & Febiger, 1952, pp. 31-32.

<sup>5</sup> Kenneth Veselak, "Historical Steps in the Development of the Modern School Health Program," *Journal of School Health*, 39:262 (September 1959).

<sup>6</sup> Means, *op. cit.*, p. 134.

<sup>7</sup> *Ibid.*, p. 261.

<sup>8</sup> *Ibid.*, pp. 284-285.

<sup>9</sup> *Ibid.*, pp. 328-329.

<sup>10</sup> *Ibid.*, p. 330.

<sup>11</sup> *Ibid.*, p. 332.

<sup>12</sup> *Ibid.*, p. 213.

cation, *Fit to Teach*.<sup>13</sup> Healthy teachers and other school personnel were considered at the 1940 White House Conference.<sup>14</sup>

## SCHOOL HEALTH SERVICES

Teamwork has been the key to the successful historical development of school health services. The first public school medical officer was appointed in New York City in 1892. The Boston Board of Health, in 1894, initiated the first medical inspection of school children. During 1899, public school personnel of Connecticut were required to test the pupils' vision. The first school nurse was employed by the New York City Schools in 1902. Other cities employing school nurses within a few years were Los Angeles, Philadelphia, Boston, and Pueblo, Colorado. In 1903, the first school dentist was appointed, in Reading, Pennsylvania.<sup>15</sup> Massachusetts made state medical inspections compulsory in its public schools in 1906.<sup>16</sup> School dental services were financed in Cincinnati and New York City in 1910.<sup>17</sup> Dental hygienists were employed in the public schools of Bridgeport, Connecticut, in 1914.<sup>18</sup>

At the White House Conference on Care of Dependent Children, it was proposed that "... every needy child should receive the best medical and surgical attention."<sup>19</sup> School health services were considered at the White House Conference on Child Welfare in 1920. Vision and hearing testing, health records, control of communicable diseases, and dental and nutritional clinics were recommended at the 1920 White House Conference.<sup>20</sup> In 1925, the National Congress of Parents and Teachers promoted the Summer Round-Up Campaign. The purpose was "... to promote among parents a realization of their responsibility for sending children to school prepared through adequate medical attention."<sup>21</sup> The American Association of School Physicians was established in 1927; in 1938 this society became the American School Health Association.<sup>22</sup> Delegates to the White House Conference on Child Health and Protection gave detailed suggestions for school health services. Daily health inspections, dental care, weighing, immunization, and follow-through activities of the nurse were

<sup>13</sup> *Ibid.*, pp. 341-342.

<sup>14</sup> *Ibid.*, p. 329.

<sup>15</sup> Charles H. Keene, "Development of School Health Services," *Journal of School Health*, 23:23 (January 1953).

<sup>16</sup> Means, *op. cit.*, p. 268.

<sup>17</sup> Charles H. Keene, "School Health Services—Second Section," *Journal of School Health*, 23:51 (February 1953).

<sup>18</sup> Veselak, *loc. cit.*, p. 268.

<sup>19</sup> Means, *op. cit.*, p. 90.

<sup>20</sup> *Ibid.*, p. 134.

<sup>21</sup> *Ibid.*, p. 212.

<sup>22</sup> *Ibid.*, pp. 184-186.

some of the phases of school health services mentioned at this 1930 Conference.<sup>23</sup> The 1940 White House Conference on Children and Youth recognized the deficiencies in school health services. The delegates proposed that adequate school health services include examination of the teeth, immunizations, early detection of diseases, thorough medical examination, vision and hearing tests, medical examination of athletes, and complete follow-through activities.<sup>24</sup>

In 1947, the American Medical Association inaugurated the series of Conferences on Physicians and Schools.<sup>25</sup> The Mid-Century White House Conference on Children and Youth advocated that all school personnel work closely with school health services. This Conference focused attention on the handicapped child.<sup>26</sup> In 1953 and 1957, two publications of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association had considerable impact on school health services. The two publications were *School Health Services* and *Health Appraisal of School Children*. The 1960 White House Conference on Children and Youth dealt extensively with school health services. Some of the problems considered by the delegates were hearing and vision screening, dental and medical examinations, tuberculin testing, prevention and control of diseases, health records, immunization, the handicapped child, and health service facilities.<sup>27</sup>

## HEALTH EDUCATION

The historical development of health education reveals the efforts of leaders in education, medicine, and official and nonofficial health agencies. In 1843, Horace Mann emphasized the need for physiology and hygiene as parts of the elementary and secondary school curriculum. More than 100 pages were devoted to the importance of hygiene.<sup>28</sup> Seven years later, Massachusetts became the first state to require hygiene and physiology as compulsory subjects in the public schools. Previously, in 1845, a course consisting of physiology, hygiene, and first aid was offered in the Boy's High School of Philadelphia.<sup>29</sup>

The period of 1850 to 1900, owing to developments in public health, education, and the scientific temperance movement, stimulated progress of health education. Shattuck's "Report of the Sanitary Commission of Massachusetts," in 1850, focused attention not only on the public health field but also on school health education. The American Public Health

<sup>23</sup> *Ibid.*, pp. 260-261.

<sup>24</sup> *Ibid.*, pp. 328-329.

<sup>25</sup> *Ibid.*, pp. 317-319.

<sup>26</sup> *Ibid.*, p. 330.

<sup>27</sup> *Ibid.*, p. 332.

<sup>28</sup> *Ibid.*, p. 33.

<sup>29</sup> *Ibid.*, p. 35.

Association was organized in 1872, and the American Association for the Advancement of Physical Education was established in 1886. These two societies were influential in the development of health education of that period.<sup>20</sup> The national movement of the Women's Christian Temperance Union, from 1880 to 1890, succeeded in not only having legislation passed concerning the teaching of the effects of alcohol, tobacco, and narcotics but also focusing national attention on physiology and hygiene as important parts of the curriculum. By 1890, 38 of our states and territories had legislation on the teaching of physiology and hygiene in the public schools.<sup>21</sup> At the National Education Association's meeting of 1896, two significant recommendations were made. First, support was given to hygiene teaching in elementary and secondary schools. Second, hygiene was to be included in the preparation of the teacher. However, a year earlier Edward M. Hartwell had revealed the nonexistence of teachers prepared in hygiene in the United States. In 1898, Hartwell indicated that school hygienists were prepared in Europe but not in the United States.<sup>22</sup>

*New concepts of health education appeared from 1900 to 1915. The open-air classrooms demonstrated practical health education. The White House Conference on the Care of Dependent Children stressed that every child receive health instruction. The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association was established in 1911. The early publications of this Committee received more attention because of its emphasis on health education than did previous publications. From 1911 to 1938, the Committee's Chairman was Thomas D. Wood, whose leadership formulated the modern school health program and health education. During this period, preparation of teachers of health education received more attention than previously.*<sup>23</sup>

From 1915 to 1920, rapid growth occurred in school health education. The Modern Health Crusade of the National Tuberculosis Association emerged with 100,000 children receiving health information and developing health habits. The Child Health Organization of America, founded in 1918, changed the concepts of health education. "Hygiene" was replaced by the term, "health education." The Organization stressed a positive approach to health rather than traditional practices. The American School Hygiene and American Child Hygiene Association were established at the same time that the National Society for the Prevention of Blindness and the National Dairy Council were founded. Each of these groups assisted in the promotion of health education. At the White House Conference on Child Welfare specific reference was made to the content areas of

<sup>20</sup> *Ibid.*, pp. 42-50.

<sup>21</sup> *Ibid.*, pp. 50-56.

<sup>22</sup> *Ibid.*, pp. 61-62.

<sup>23</sup> *Ibid.*, pp. 77-109.

health education and to compulsory courses in health education in public schools. During this period, the Child Health Organization stimulated interest in health education as a teaching field among teachers.<sup>34</sup>

The third decade of the twentieth century disclosed that health education had gained some acceptance as a subject-matter field. In 1921, the Malden Study showed that health education was practical, could change children's health habits, and could influence the child's growth. Other studies were the Child Health School, health education survey of the 48 states by the National Tuberculosis Association, health survey of 86 cities by the American Child Health Association, and the School Health Study. In 1923, the American Child Hygiene Association and Child Health Organization of America merged into the American Child Health Association. The first issue of *Health Bulletin for Teachers* was published by the Metropolitan Life Insurance Company in April 1929. Many conferences were held to promote the acceptance of health education. The 1924 publication, *Health Education*, did more than any other publication of the period to promote health education. In 1927, delegates to the Fourth Health Education Conference of the American Child Health Association recommended specific health education courses in the secondary schools. Safety education emerged during the early 1920's and developed quickly. In 1920, the American Child Health Association published a review of health education in 16 teacher-education institutions. The study revealed that very little health education was offered to teachers.<sup>35</sup> The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association made this statement in 1924:<sup>36</sup>

Every prospective teacher when not specializing in Health Education should be required to take one course where the health program as a whole is considered, synthesis indicated, and methods of securing the standardized desired results are discussed.

Health education, from 1930 to 1940, had difficulty as a subject-matter field, owing to the emphasis on the traditional fields. The Cattaraugus County studies, National Survey of Secondary Education, Joint Committee on Health Problems in Education's study, and studies in rural New York communities revealed significant findings about the importance of health education. In 1938, the *Journal of School Health* was first published, and it has continued throughout the years to be a leading influence in the

<sup>34</sup> *Ibid.*, pp. 110-153.

<sup>35</sup> *Ibid.*, pp. 154-237.

<sup>36</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education—A Program for Public Schools and Teacher Training Institutions*. New York: The Committee, 1924, p. 76.

development of school health education. The 1930 White House Conference urged not only the necessity of health education and total school health programs but also the importance of teachers of health education. Personal, home, and community health; safety; and mental and sex hygiene were listed as areas of health education. Practical learning was stressed in methods of health education, and time allotment for health education received more attention. Studies of this decade indicated that some progress had been made on the inclusion of health education in the preparation of teachers. The Joint Committee on Health Problems in Education's 1930 publication, *Health Education*, stressed motivation, facts and procedures in strengthening health practices, and establishment of permanent desirable health attitudes and habits.<sup>37</sup>

The forties, fifties, and sixties of the twentieth century revealed health education as a single subject-matter field and as an essential part of the modern school curriculum. In the forties, these research studies were among the many studies of that decade: Kellogg Foundation Health Projects, Astoria Study, New York City Study, and the Denver Study, *Health Interests of Children*. Conferences dealt with undergraduate and graduate preparation of teachers of health education, functions of school administrators in health programs, and health in colleges. During the fifties, the School Health Education Evaluative Study of the Los Angeles Area and the President's Conference on Fitness of American Youth were established. The 1940 White House Conference on Children in a Democracy stressed mental health and need for health education in the elementary and secondary schools. The Mid-Century White House Conference recommended that "...teaching of health ought to be given more time in the curriculum and teachers of health ought to be better prepared." The 1960 White House Conference mentioned specific areas of health education: mental health, alcoholism, tobacco, safety education, nutrition, accident prevention, family life education, dental health and fluoridation, and community health. Many statements of the 1960 White House Conference made specific reference to health education in elementary and secondary schools.

Many outstanding publications appeared in these decades. Some of these publications were *Suggested School Health Policies* (1946) of the National Conference for Cooperation in Health Education; *Health in Schools* (1942 and 1951), *Twentieth Yearbook of the American Association of School Administrators*; and *Health Education* (1941, 1948, and 1961) of the Joint Committee on Health Problems in Education.<sup>38</sup>

Several noteworthy developments during the sixties were the Teacher Institutes on the Science of Health Education, National Research Institute

<sup>37</sup> Means, *op. cit.*, pp. 238-290.

<sup>38</sup> *Ibid.*, pp. 291-371.



on School and College Health, and the Bronfman Foundation School Health Education Study. The purpose of the Bronfman Study was "... to determine the nature and scope of health education as it exists in the elementary and secondary public schools throughout the country."<sup>39</sup> In 1962, the National Professional Preparation Conference, sponsored by the American Association for Health, Physical Education, and Recreation, gave specific recommendations for the teacher of health education. The Research Council of the American School Health Association devoted itself exclusively to research in health education and utilized the research efforts of the many professional fields represented among the members of the Council. The fifties and sixties have witnessed a wealth of literature on school health education by independent authors. Some of these authorities, by their school health experiences and preparation, have provided a scholarly depth to the school health program not found in the literature of the third, fourth, and fifth decades of the twentieth century.

## SYNTHESIS

At the beginning of this chapter, the *school health program* was defined "... as three interrelated parts, namely, healthful school living, school health services, and health education."<sup>40</sup> Each of these parts of the school health program has been defined.

### *Healthful School Living*<sup>41</sup>

The utilization of a safe and wholesome environment, consideration of individual health, organizing the school day, and planning classroom procedures to favorably influence emotional, social, and physical health.

### *School Health Services*<sup>42</sup>

The procedures used by physicians, dentists, nurses, teachers, etc., designed to appraise, protect, and promote optimum health of students and school personnel.

(Activities frequently included in school health services are those used to [1] appraise the health status of students and school personnel; [2] counsel students, teachers, parents, and others for the purpose of helping school-age children get treatment or for arranging education programs in keeping with their abilities; [3] help prevent or control the spread of disease; [4] provide emergency care for injury or sudden sickness.)

<sup>39</sup> "School Health Education Study, 1961-1962." *Journal of Health, Physical Education, and Recreation*, 33:28 (January 1962).

<sup>40</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education* (5th ed.), *loc. cit.*

<sup>41</sup> "Health Education Terminology." *Journal of Health, Physical Education, and Recreation*, 33:27 (November 1962).

<sup>42</sup> *Ibid.*, p. 28.

*School Health Education*<sup>43</sup>

The process of providing or utilizing experiences for favorably influencing understandings, attitudes, and practices relating to individual, family, and community health.

In this text, four parts of the school health program will be presented: Part I—School Health Services; Part II—Healthful School Living; Part III—Health Education; and Part IV—Organization and Administration of the School Health Program. Thus this text attempts to fulfill the recommendations of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association in that the total school health program is presented and the parts of the program are interrelated.

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<sup>43</sup> *Ibid.*

**PART I**

**SCHOOL HEALTH SERVICES**

## APPRAISAL OF THE PUPIL'S HEALTH STATUS

Seventy years ago, the prevention of diseases was the main objective of school health services. Boards of health and education, who had become alarmed at the rising number of diseases among children of school age, began to take measures to reduce the incidence. The first medical inspection of school children was made by the Boston Board of Health in 1894. The first school nurse was employed by the New York City schools in 1902.<sup>1</sup>

Today, though prevention of diseases remains an important objective, there are many other varied and complex objectives of school health services. School health services has been defined as<sup>2</sup>

... the procedures used by physicians, dentists, nurses, teachers, etc., designed to appraise, protect, and promote optimum health of students and school personnel. (Activities frequently included in school health services are those used to: [1] appraise the health status of pupils and school personnel; [2] counsel students, teachers, parents, and others for the purpose of helping school-age children get treatment or for arranging education programs in keeping with their abilities; [3] help prevent or control the spread of disease; [4] provide emergency care for injury or sudden sickness.)

With this definition in mind, Part I of this textbook is divided into Chapter 2, "Appraisal of the Pupil's Health Status"; Chapter 3, "Dental Health"; Chapter 4, "Nonremediable Health Conditions"; Chapter 5, "Following Appraisal of the Pupil's Health Status, What Can School Personnel Do?"; Chapter 6, "Prevention and Control of Diseases"; and Chapter 7, "Emergency Care."

<sup>1</sup> Charles H. Keene. "School Health Services—Second Section." *Journal of School Health*, 23:51 (February 1953).

<sup>2</sup> Joint Committee on Health Education Terminology. "Health Education Terminology." *Journal of Health, Physical Education, and Recreation*, 33:27 (November 1962).

The first division of school health services as defined by the Joint Committee on Health Education Terminology is the appraisal of the health status of pupils and school personnel. Chapter 2 will include the procedures established to appraise the pupil's health. Chapter 11 will include the health of the school personnel. Dental health has been inserted early in the book as Chapter 3, owing to the numerous dental health problems of school-age children.

## PURPOSES OF HEALTH APPRAISAL

Many procedures are utilized in determining the pupil's health status. Through medical diagnosis, the family physician can present information that is vital in assessing the pupil's health status. Through full-mouth x-rays and dental examinations revealing dental diseases and defects, the family dentist assists health appraisal. The teacher, nurse, and parent also can observe changes in the pupil's behavior and appearance. Posture and nutritional screening, skin and tuberculin tests, and screening of vision and hearing can disclose data. Parent-teacher, parent-nurse, and teacher-nurse conferences can add information to the student's health history. Emergency care records show the incidence of illness and injury. Immunization records often indicate reasons for school absenteeism; some children have not had the necessary childhood immunization. Physical performance tests and psychological and psychometric tests can give valuable data to physicians at the time of the medical examination.

Why is the health appraisal important? The American Medical Association reports from its Third National Conference on Physicians and Schools that health appraisals can (1) contribute to the child's maximum effectiveness as both an individual and a member of the community; (2) indicate the maximum fitness of the child to receive an education; (3) inform school personnel, parents, and the child of his health status and any remediable health condition; (4) suggest adjustments based on the child's needs, in his school activities and curriculum; and (5) serve as learning experiences that will promote healthful living among children, teachers, and parents.<sup>3</sup>

In addition to these purposes, the author would add five others. First, the health appraisal indicates the presence of hidden and known diseases. It reveals unsuspected remediable and irremediable health conditions. It discloses types of emotional illnesses. Health appraisal may show the need for medical care of injuries. It can indicate dental diseases and defects. Thus the health appraisal can broaden the pupil's understanding of his health status. Second, the health appraisal can reveal the pupil's health

<sup>3</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Appraisal of School Children* (3d ed.). Chicago: American Medical Association, 1961, p. 5.

practices and attitudes and, to some extent, his fund of health information. Third, the health practices, attitudes, and knowledge can disclose the content (subject matter) of the health instruction needed to improve his existing health status. Fourth, when health instruction and healthful school living can be related to school health services, the total school health program becomes meaningful to children, parents, and school and community personnel. Fifth, as health appraisal is understood, questions will be raised concerning the research necessary to improve the types of health appraisal, the exchange of health information among persons concerned, in-service health education of school personnel, and inadequacies of the total school health program.

Because the purposes of health appraisal are numerous, school personnel should be aware of their obligations in promoting successful health appraisals. They must always remember that results of any health appraisal are confidential. They must also realize that variations occur in appraisals. Observable health signs listed by personnel as indicating changes in pupils' appearances and behavior differ from medical and dental diagnosis. Medical diagnostic techniques and therapy are not utilized by nonmedical school personnel. Elementary and secondary schools are not, and cannot be expected to be hospitals, clinics, or local health departments. American Red Cross First Aid is the emergency care given to an injured or sick pupil by nonmedically prepared school personnel. Observable signs of possible diseases, nonremediable health conditions, and injuries should be reported by nonschool health services' personnel to the school nurse or to the school physician, if available. Any notification to parents of possible diseases, nonremediable health conditions, and injuries should come from school health services' personnel and teachers, with a statement regarding which health problems need immediate parental attention. The parents are encouraged to seek medical and dental assistance.

## PARENTAL RESPONSIBILITIES

The pupil's health is primarily a parental responsibility, and one that does not end with the entrance of the teenager into the secondary school. Rather, the responsibility shifts from the parent to the adolescent, with parental guidance. One of the parental functions in school health services is the parents' willingness to supply information concerning a pupil's illnesses, injuries, operations, possible physical health difficulties, health habits, and emotional health problems. This information should be placed in the pupil's health history.

A second function of parents in school health services is to develop close working relations with family physicians and dentists. These relations result from the interchange of health information among parents and family physicians and dentists, through health guidance sought by parents,

and parental willingness to carry out the physician's and dentist's requests. The physician and dentist rely on the day-to-day observations of parents to supplement their examinations.

A *third* function of parents in school health services is to accept their responsibilities in seeking correction of the child's remediable health problems. Too often, elementary and secondary schools have not emphasized to parents that while school personnel may observe certain health conditions it is the parents' responsibility to seek correction of the child's remediable problems. Occasionally, parents assume that school personnel will correct the pupil's health difficulty. The school or public health nurse acquaints the parent with medical and dental services needed to correct the difficulty, but the parent must seek and obtain the needed medical and dental care. Local health departments can assist the personnel of school health services and administrative personnel when parents are unable, or refuse, to seek and obtain the needed medical and dental care for their child.

A *fourth* function of parents is to cooperate with the instructional personnel, the school nurse, and the school administrator in school health services. This cooperation begins during the readiness for school medical examination and continues with parental compliance with the school's procedures for emergency care and prevention of disease, parental insistence that medical and dental examinations be a definite part of family living, and parental interest in the total school health program. To strengthen the parental cooperation the personnel of school health services might provide parents with information about general observable signs that might indicate possible diseases, nonremediable conditions, or injuries occurring to their son or daughter.

A *fifth* function of parents in school health services pertains to parents of elementary school children. The parents should be present at medical and dental examinations performed in the offices of the family physician and dentist. The parents' cooperation will add to the success of the examination. Questions can be asked by or directed to the parents. The elementary school pupil should realize the value of these examinations. As he becomes older, he should accept responsibilities for his own medical and dental checkups.

The *sixth* function of parents in school health services is to be aware of their limited information about health and to become better informed in the many phases of adult, child, school, home, and community health. The parents' interest in health topics can stimulate the schools to promote comprehensive adult health education. A parent who is well informed about the school health program will support the development of the program more readily than will the parent who is not informed.

The *seventh* function of parents in school health services is to secure early immunization of their child. Local boards of education may indicate certain required immunization procedures for pupil entrance into local

public schools. State-wide regulations may exist on immunization against smallpox, diphtheria, and polio for all pupils in public schools.

## HEALTH RECORD

Results of any appraisal should be recorded on a cumulative pupil health record. Seven sections can comprise the health record.

1. Pupil identification and teacher observations
2. Pupil health history (detachable)
3. Medical examination (detachable)
4. Physician's report to the school on significant findings of the medical examination (detachable)
5. Follow-through and nutritional, hearing, and vision screening (detachable)
6. Dental examination with recommendations for further dental care (detachable)
7. Posture screening and summary of health data to be used by the teacher in the instructional program

These seven sections of the health record are found in Appendix A. Five of these sections are detachable. Physicians and dentists can retain in their files confidential data resulting from their examinations. Detachable sections allow physicians and dentists to send to the schools significant pupil information. With a detachable section for the follow-through, the nurse can record pertinent information needed by teachers.

The health record (Appendix A) was designed to assist school personnel in focusing their attention on pupil data resulting from many types of health appraisals. The front cover of the record contains information needed during emergency care of the sick or injured pupil. The health record can be used during the pupil's 12 years of school life and when he changes residence. A summary of the health data can be utilized in planning health instruction. The five sections can be separated from the main sections, mailed, and returned to the complete record.

The health record (Appendix A) resulted from suggestions of nurses, family physicians and dentists, state departments of health and education, city and rural schoolteachers, and school administrators. Most state departments of health and education have sample health records to assist school personnel in developing their own health records.

## ACCESSIBILITY OF HEALTH RECORDS

Most teachers of elementary pupils are responsible for informing the parents of any continuously observed signs of health problems, physical education activities, and health instruction. To complete these responsibilities, teachers should have access to the pupil's health record, which might well be kept in the pupil's cumulative folder.



Irritability

Below-par schoolwork

Upset stomach

Stiff neck

Backache

Noisy breathing

Blueness of lips

Signs designating characteristics of diseases such as measles (spots appearing on face, neck, chest, arms of child), chicken pox, mumps, scarlet fever, etc.

## SOME SIGNS OF A POSSIBLE "COMMON COLD"

"Stuffiness" in the nose

Soreness and "scratchiness" in nose and throat

Coughing

Sneezing and sniffing

"Runny nose" and discharge from nose

Watery eyes

Tickling in the throat

Fever (sometimes)

Headache (sometimes)

Many of these signs of a possible cold may be the onset of other communicable diseases.

## SOME SIGNS OF POSSIBLE VISUAL DIFFICULTIES

Rubbing of the eyes

Continual frowning

Blinking more than usual

Position of the book held in reading—too close or too far away

Sensitivity to light

Inattention

Red-rimmed and watery eyes

Swollen eyelids

Repeated styes

Complaints of dizziness

Stumbling and tripping over objects

Shutting or covering of one eye when reading

Tendency to reverse words or syllables

Excessive head movements while reading

Body rigid while looking at close objects

Complaints of headaches

Susceptibility to fatigue

Difficulty in distinguishing colors

Requests to have writing on chalkboard repeated orally

*Irritability*

Dislike of assignments requiring close work

Drawings described in a confused manner

Difficulty in reading (reads only briefly without stopping or loses place)

Screwing up of face when reading

*Poor hand-eye coordination*

Poor score on accuracy tests such as target throwing

Complaints of seeing objects in double vision

Head turned to one side when reading or writing

Unnatural position of the head in an attempt to avoid glare

*Squinting*

Voluntarily changes in his location, to see better

*Crusted eyelids*

Inability to distinguish symbols nearly similar in appearance, such as

*a* and *o*, *e* and *c*, *m* and *n*, *n* and *r*, *f* and *t*, *s* and *6*, *7* and *1*, *3* and *8**Crossed eyes*

Erratic eye movements

Body restlessness during class work

Loss of peripheral vision

Head thrust forward

SOME SIGNS OF  
POSSIBLE HEARING DIFFICULTIES

Requests for repetition of what has been said

Complaints of earaches

"Runny ear"

Swollen glands

Complaints of noises in the head, such as ringing, buzzing, hissing

Breathing through mouth

Peculiar-sounding voice (pitch too high, too low, too loud)

Complaints of heaviness, stuffiness, or fullness in the ear

Cocking of an ear toward the speaker

Repeatedly answering questions incorrectly

Listlessness

Sensitivity

Suspiciousness

Aloofness

Failure to locate source of sound

Watching other children before beginning to work or copies from  
other pupils

Bewildered facial expression

Use of his hands in making known his wants

A look of "watchful waiting"

Below-par schoolwork

Ready fatigue

Close attachment to the teacher during group activities—"shadowing"  
of the teacher

Poor sense of balance  
 Monotonous speaking and singing  
 Faulty articulation  
 Tendency to lip read  
 Efforts to lip read  
 Hand held to ear  
 Observing other pupils during teachers' directions  
 Interrupting conversations of other pupils

## SOME SIGNS OF POSSIBLE EMOTIONAL HEALTH PROBLEMS

Undue restlessness such as facial grimacing, nail biting, lip sucking, twisting or pulling the hair, pulling the ear, playing with hands not attributable to any observable physical cause  
 Excessive daydreaming  
 Persistent inattentiveness  
 Extreme sensitivity  
 Crying easily  
 Overtimidity, seclusiveness, extreme docility, withdrawal  
 Overaggressiveness, extreme "showing off"  
 Resistance to authority  
 Complaints of being "picked on," not being treated fairly, or being discriminated against  
 Antagonism  
 Poor sportsmanship  
 Difficulty in reading or reciting not caused by any observable physical cause  
 Poor schoolwork in spite of good health and adequate intellectual capacity  
 Chronic absence  
 Continual lying  
 Lack of cooperation (negative attitude)  
 Frequent bullying  
 Continual selfishness  
 Unacceptable sexual conduct  
 Temper tantrums  
 Destructiveness  
 Cruelty  
 Uncontrollable emotions  
 Overstudiousness  
 Domineering attitude  
 Depression and unhappiness  
 Listlessness  
 Lack of respect for the property of others  
 Obstinacy  
 Stealing, cheating

## SOME SIGNS OF POSSIBLE NUTRITIONAL DEFICIENCIES

Failure to show a steady gain in weight  
 Lack of appetite or finicky appetite  
 Avoidance of normal play activities  
 Poor postural habits—round shoulders  
 Susceptibility to fatigue  
 Complaints of pains on sitting and standing  
 Chronic diarrhea or constipation  
 Repeated respiratory infections  
 Persistent cracking and slight redness at the corners of the mouth  
 Small or flabby muscles  
 Excessive thinness  
 Excessively fat or poor distribution of fat on body surfaces  
 Strained, worried look  
 Listlessness and inactivity  
 Irritability and difficulty in managing  
 Poor dental health  
 Pallor  
 Continual hunger  
 Abnormalities in bone growth—bowlegs, pigeon breast  
 Rough, scaly skin  
 Dry, coarse, brittle, lusterless hair  
 Inflammation of margins of eyelids  
 Headaches  
 Eye fatigue and sensitivity to light  
 Tender, swollen, bleeding, or spongy gums  
 Easily bruised skin  
 Sore joints  
 Pains in the musculature  
 Apathy  
 Sore, beefy tongue  
 Spindly arms and legs, flat chest  
 Indigestion  
 Abnormalcy in discharge of tears  
 Weakness and loss of strength  
 Skin abrasions slow to heal  
 Brittle nails  
 Fatigue slouch  
 Burning and prickling of skin  
 Burning or itching of eyes

## SOME SIGNS OF POSSIBLE DENTAL HEALTH PROBLEMS

Swollen jaws  
 Evidence of tooth decay

Poor oral habits, such as thumb sucking, nail biting  
 Toothache  
 Tartar  
 Bleeding gums  
 Malocclusions  
 Halitosis  
 Ulcerated gums  
 Brown or black spots at edge of tooth  
 Unusual placement of teeth  
 Use of only one side of the mouth for chewing  
 Refusal to eat hard food  
 Abnormal sucking  
 Loose teeth

## SOME SIGNS OF POSSIBLE POSTURE CONDITIONS

### 1. *Standing Posture*

Round shoulders  
 Sway-back  
 One shoulder higher than other  
 One hip prominent  
 Markedly inclined head  
 Markedly depressed or deformed chest  
 Knock-knees or knees extended back  
 Bowlegs  
 Flat feet  
 Protruding shoulder blades  
 Protruding and sagging abdomen  
 Toes pointed outward, ankles turned inward, body weight on inner side of feet  
 General body appearance—slumping  
 Weight on one foot  
 Uneven walking gait

### 2. *Sitting Posture*

Slumping over so that the child is sitting on the end of the spine  
 Hunching over  
 Leaning to one side because chair arm is too high  
 Curling one foot under the body  
 Not placing feet on the floor

## COMMON OBSERVABLE HEALTH PROBLEMS

Many of the terms, resulting from the medical examinations and screening procedures, should be familiar to school personnel. These terms are described as follows:

## SKIN, HAIR, NAILS

*acne* inflammation of the sebaceous glands and pores of the face, back, and chest causing an unsightly skin condition.

*birthmark* abnormal condition of the surface blood vessels creating discoloration or pigmentation of unborn child's skin.

*blackheads* hard plugs formed from secretions of sebaceous glands.

*boils* inflammation of the skin. Bacteria enter the skin by hair follicles or sweat glands.

*eczema* itchy, inflamed skin. Small blisters form. Watery discharge appears. Discharge dries into scales or crusts.

*favus* fungus infection marked by cup-shaped yellowish crusts found over hair follicles. Favus is usually located on the scalp and results in loss of hair.

*hangnails* drying or cracking of cuticle around nail. Because cuticle is poorly oiled and cracks easily, it is often picked or bitten off.

*hives* small pink and white skin elevations of various sizes resulting from an allergen within or outside the body. Intense itching accompanies elevations.

*impetigo* highly contagious disease consisting of sores arising on inflamed skin areas. Sores ooze a thick, sticky yellow or brown liquid. Scabs or crusts are built around liquid. Sores create intense itching. Crusts are shed and the exposed dermis looks red and "weepy." Direct and indirect contact are means of spreading impetigo.

*infectious dandruff* infection of sebaceous glands of the scalp. These glands secrete discharge that collects in yellowish, greasy, thick scales. Scales cling to scalp. Itching accompanies dandruff.

*moles* densely packed skin cells pigmented either brown or black.

*pediculosis* skin disease caused by lice. Body lice create intense itching resulting in other skin inflammations. Head lice create irritation to the scalp. Scratching accompanies the irritation. Lice lay their eggs in glistening lumps connected to hair and at a short distance from the scalp.

*pimples* obstruction of normal functioning of sebaceous glands resulting in small solid elevations on the skin.

*poison ivy* small, swelling, red, itchy spots. Blisters form on skin. Blisters become infected.

*ringworm of the general body surface* a fungus growth occurring on the skin and at the margin of the nails. Round, elevated, irregular, reddish patches spreading from red edges while healing in the center. Itching accompanies scaling. It can be transferred from one part of the body to other parts of the body or from one person to another person.

*ringworm of the groin and crotch* inflamed skin area in patches. Itching is intense. Infected areas become raw from scratching. Severe bleeding occurs. Infected areas appear.

tion rests with the superintendent of schools and the local medical society. The decision must be made before any planning of the medical examinations can be done. As soon as the decision is forthcoming, the local or county medical society should be informed.

The school health committee of the local or county medical society can assist in the cooperative planning of the medical examination. One of the problems facing this committee will be to submit to the schools a panel of examining physicians, who should be available to parents having no family physician. Another problem will be to determine the extent of the pupil's medical examination. Local medical practices will determine the extent of the medical examination. When school physicians are employed by boards of education, these physicians determine the extent of the medical examination. In some localities the school health committee of the local or county medical society establishes the procedures between schools and physicians regarding the examinations. These procedures should be followed, and conflicts arising within schools removed as soon as possible. Among the difficulties in establishing the procedures are the date of examination for each pupil, payment for services rendered by physicians, availability of the health record to the examining physician, pupil excuses from school in order to be present at the time of examination, accessibility of the physician's recommendations to the schools, and exchange of pupil information following the examination.

### WHAT IS THE MEDICAL EXAMINATION?

Medical examinations that are completed by school physicians or by physicians of the local health department are limited in scope because the pupil examined is unknown to the physician. The examinations should indicate the pupil's health status and uncover remediable conditions as the result of the medical diagnosis. The following conditions and parts of the human body are included in this medical evaluation: \*

Nutrition	Heart
Eyes and eyelids	Pulse (resting)
Ears and eardrums	Pulse (after exercise)
Skin and hair	Lungs
Nervous System	Nose, throat, and tonsils
Muscle tone	Thyroid gland
Posture	Lymph nodes
Bones and joints	Teeth and gums
Abdomen	

sire to carry out a definitive examination for diagnostic purposes. Urinalysis and serologic tests may be included. Blood pressure may be recorded for high school pupils. Boys might be examined for possible hernia. Toes might be inspected for fungus growth. These are some of the examples of other phases of the medical examination that family physicians might wish to include.

Following the medical examination, the physician gives recommendations on the health record to be used by the school personnel. Such recommendations call attention to remediable health defects and to the importance of immediate medical care. To the teacher, the physician suggests modifications in school work. He may indicate whether the pupil can or cannot climb stairs, needs special seating placement, should have supplementary school feeding, or has irremediable health problems. The physician classifies the student for physical education activities.

### FREQUENCY OF EXAMINATIONS

The frequency of medical examinations for the school-age pupil has been a debatable question for many years. The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association,<sup>7</sup> the National Conferences on Physicians and Schools,<sup>8</sup> and the American Academy of Pediatrics<sup>9</sup> suggest a minimum of four medical examinations: one at entrance to the first grade, one in the intermediate elementary grades, one at the beginning of adolescence, and one before leaving school. These are recommendations for all students. However, studies by Yankauer and Lawrence have shown that routine school medical examinations in the elementary grades may not be necessary. In a survey to determine the value of routine medical examinations given to first-grade children previously examined in kindergarten, Yankauer and Lawrence<sup>10</sup> found these examinations had little value from a case-finding point of view. In a later survey of 704 first-grade children given medical examinations every year for 3 years, Yankauer and Lawrence<sup>11</sup> stated that periodic medical examinations given during the first 4 years of elementary school were likewise of little value from a case-

<sup>7</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *School Health Services*. Washington, D.C.: National Education Association, 1953, pp. 40-43.

<sup>8</sup> American Medical Association. *Reports of the National Conferences on Physicians and Schools*. Chicago: The Association.

<sup>9</sup> American Academy of Pediatrics, Committee on School Health. *School Health Policies*. Evanston, Ill.: The Academy, 1939, p. 679.

<sup>10</sup> Alfred Yankauer and Ruth A. Lawrence. "A Study of Periodic School Medical Examinations: I. Methodology and Initial Findings." *American Journal of Public Health*, 45:71 (January 1955).

<sup>11</sup> Alfred Yankauer and Ruth Lawrence. "A Study of Periodic School Medical Examinations: Annual Increment of New 'Defects.'" *American Journal of Public Health*, 46:1553 (December 1956).



finding point of view. Further evidence of changes in the frequency of medical examinations for the school-age child comes from the Denver Public Schools.<sup>12</sup> Previous to September 1960, the routine medical examinations were given at grades 1, 4, 7, and 10. These routine medical examinations were reduced to three examinations during the school life of the pupil, at grades 1, 6, and 9, as of September 1960. It is possible that the frequency of medical examinations might depend on the community's needs, recommendations of the local medical society and health department, and the results of teachers' observations.

In the suggested frequency of medical examinations, there may not be any medical examination at the student's entrance into the junior or senior high school. Not all young people reach adolescence at the seventh or tenth grades. Thus the physical education teachers, depending on the physician's classification of the student for physical education activities, have no health grade for the student. One of the purposes of the medical examination is to classify the student for physical education. Students entering the junior or senior high school should have a medical examination so that they are classified for physical education.

#### READINESS FOR SCHOOL MEDICAL EXAMINATIONS

There may be four types of medical examinations: readiness for school, routine, special, and referral. Readiness for school examinations can be given to entering first-graders and new students. Routine examinations might be used as the child enters fourth grade, seventh grade, and previous to his high school graduation. Special examinations are given to the pupil with a physical handicap, the student fulfilling employment procedures, the pupil in adapted physical education, and the athlete competing in interscholastic and intramural sports. Referral examinations take place after the teacher detects unusual signs in the pupil's appearance and behavior, emergency care of the sick or injured pupil has been given, and screening procedures carried out.

In planning the readiness for school medical examinations, many school personnel and Parent-Teacher Association members will be involved. The superintendent of schools has a census of kindergarten or first-grade children entering the schools a year previous to their entrance. The health coordinator, school nurse, and designated PTA members select a preregistration date in late April. The preregistration meeting will acquaint parents with the necessity for medical and dental examinations and immunization procedures previous to the child's entrance into first grade. Building principals, first-grade teachers, health coordinators, school nurses, and PTA members plan this preregistration meeting. Invitations are sent

<sup>12</sup> Health Service Department, Denver Public Schools. *Thirty-sixth Annual Report, 1960-1961*. Denver, Colo.: Denver Public Schools, pp. 24-25.

to parents of children entering the first grade and of new pupils in elementary schools. Enrollment cards and health records are obtained for parental use at the preregistration meeting. At the meeting, parents are informed of the use of enrollment cards and of the necessity for medical and dental examinations and immunization procedures. Health records are distributed and explained. During June, members of the PTA telephone parents on the invitation list and remind them of the necessity for medical and dental examinations and immunization procedures. Parents should be encouraged to have the child's health difficulties corrected before he enters school. On the opening day of school in September, the first-grade teachers check whether the children have had medical and dental examinations and immunization. This information is recorded on the pupils' health records. Teachers inform the school nurse about children who have not had medical and dental examinations or immunization, and the school nurse interviews the parents of these children through home visits. Medical and dental examinations are planned for indigent children through the combined efforts of parents and the school nurse.

### ROUTINE MEDICAL EXAMINATIONS

Routine medical examinations may be given to pupils during designated school years. They are used to classify students for physical education and are given by family physicians to pupils whose personal health needs continual checking.

Routine examinations do not take the place of yearly examinations given by the family physician. Parents should be encouraged to continue yearly medical examinations even though public schools may provide routine examinations.

The routine medical examination can classify the student for required physical education activities. Required physical education refers to regularly scheduled class periods of physical education and does not include interscholastic or intramural sports. If this classification is to be worthy of its purposes, the examining physician should understand (1) the importance of the medical examination to physical education; (2) the required physical education activities, staff, and facilities; and (3) the types of classifications that he (the physician) will give.

The physician should be aware that the physical educator discovers the student's physical capacities through motor fitness tests, physical fitness indices, and athletic ability tests. With this battery of information and with knowledge of students' interests in physical education, the physical education activities are planned to meet the student's capacities, needs, and interests. At the secondary level, the physical education activities are designed to prepare the young adult for physical recreational activities used in later life. At the elementary level, the basic physical education fundamentals and skills are taught. In the modern program of physical

education, the physiological capacities of each student must be known. The physical educator realizes that there are individual pupil differences in body build and physiological conditions. He is aware that some of his students cannot participate in strenuous activities. The medical examination will provide data on the health status of the individual pupil and will determine the extent of the pupil's participation in the physical education program.

The physician should understand the types of pupil classification for physical education. In Section 4 of the health record (Appendix A), there is a subdivision called "Classification for Physical Education" by the physician. This subdivision reads:

... Check the one best suited to the student

- A. Unlimited physical education activity, including interscholastic sports and intramurals
- B. Moderate physical activity limited to physical education classes, excluding interscholastic sports and more strenuous activities
- C. Adapted individual physical education
- D. Social recreation including quiet games and activities involving little or no physical exertion

Provided below this last subdivision is space for the physician to make recommendations for the students classified "B" and "C." Using these four classifications, there would be no reason for a physician to issue a "blanket" medical excuse for physical education.

Physical educators occasionally ask how a medical examination can be given to their students when there are no routine medical examinations. In most localities there are county medical societies. The physical educators can seek medical assistance from these societies for the classification of students in physical education. When the county medical society has a school health committee, the society may recommend a panel of examining physicians to give the medical examinations.

Routine medical examinations are used by family physicians to check the pupil whose personal health needs constant surveillance. This child may be recovering from prolonged illness, a serious operation, or rheumatic fever, or the child may have diabetes. These routine medical examinations not only check the pupil's health status but also supply the parent and teacher with health information that will include the needed amount of rest and relaxation, food intake, health habits, school and home activities, and adjustments to emotional health problems. The pupil may or may not be in adapted physical education. He may attend adapted physical education for several weeks and then return to regular physical education activities after recovery from prolonged illness. The diabetic pupil will be encouraged to participate in regular physical education activities.

## SPECIAL MEDICAL EXAMINATIONS

In addition to the readiness for school and routine medical examinations, there is a definite need in school health services for special medical examinations. These examinations can include those for the handicapped pupil, the student in the adapted physical education, the athlete participating in interscholastic and intramural sports, and the student complying with regulations for an employment certificate.

Handicapped students include those with many remediable and irremediable health problems. Such students may have hearing and visual difficulties, severe posture conditions, nutritional deficiencies, and major disabling conditions resulting from tuberculosis, heart disease, poliomyelitis, traumatic injuries, epilepsy, cerebral palsy, and neurological problems. There are a million or more children of school age in the United States with these handicaps.

Some public school systems provide special education teachers for these children. Successful programs for exceptional children depend on special medical examinations that can be given by the family physician, a medical specialist such as an ophthalmologist, or a panel of cooperating local physicians. Special medical examinations occur more frequently than routine examinations and differ in diagnostic medical procedures. Health information can be brought to the attention of special education and classroom teachers as a result of special medical examinations.

According to the American Association for Health, Physical Education, and Recreation,<sup>13</sup> adapted physical education is a

...diversified program of developmental activities, games, sports, and rhythms suited to the interests, capacities, and limitations of students with disabilities who may not safely or successfully engage in unrestricted participation in the vigorous activities of the general physical education program.

Through this adapted physical education program the student who cannot engage in the regular physical education program has an opportunity to (1) improve his neuromuscular skills, general strength, and endurance; (2) avoid conditions that might aggravate his physical condition or subject him to unnecessary injury; (3) be continually observed and be referred to medical or other services when the need arises; and (4) be provided with opportunities that promote his psychological adjustment and social development.<sup>14</sup>

<sup>13</sup> AAHPER Committee on Adapted Physical Education and endorsed by the AAHPER Board of Directors and the Joint Committee on Health Problems in Education of the American Medical Association and the National Education Association. "Guiding Principles for Adapted Physical Education." *Journal of the American Association for Health, Physical Education, and Recreation*, 23:15 (April 1952).

<sup>14</sup> *Ibid.*

These opportunities can be provided when there are medical supervision and a physical educator with a background in adapted physical education. The medical supervision begins with the student's first routine medical examination. The student is classified as "C" in physical education. With this classification of "C" (adapted physical education), the physician makes recommendations for the student's adapted physical education. The written recommendations by the physician are the result of conferences between the physical educator and the physician regarding the activities offered in adapted physical education.

The physician will continue special medical examinations of the student and medical supervision of the student's adapted physical education. A student with a severe posture condition not only will be classified for adapted physical education but also will have medical recommendations for postural exercises and physical education activities. From time to time during the school year, the physician should visit the student during adapted physical education classes and suggest changes or modifications in activities. The physical educator in charge of the student's adapted physical education must change and modify the activities according to the physician's suggestions. The physical educator should seek the physician's advice about the student's progress or retardation. In adapted physical education, the physical educator cannot assume any medical responsibility but must follow the suggestions and recommendations of the physician. When the physical educator has specialized preparation in adapted physical education, he can adjust physical education activities to the individual student's capacities and satisfy medical recommendations.

The special medical examinations are vital in determining the health status of the athlete participating in interscholastic and intramural sports because of the physiological demands on the human body in such sports. These athletes will undergo routine medical examinations during designated school years. The student in interscholastic sports should receive a medical examination at the beginning of the sport season. After each injury occurring to the athlete, the physician's examination should determine whether he is able to continue to participate. Some secondary schools may require additional medical examinations, depending on the sport and the age of participants. The family or team physician gives the examinations, which should be thorough and should include all parts of the body. These special medical examinations are extremely important in detecting any unusual signs not observed by the coach.

The elementary or secondary school student participating in intramural sports should not fail to receive a special medical examination at the beginning of each semester. Most schools do not require students engaging in intramurals to have special medical examinations. The acceptance of the routine medical examination and student's classification for physical education are the only medical examinations given. School administrators

who are aware of the physiological demands placed on the student, the age of participants, and the nonexistence of conditioning previous to intramural competition insist on special medical examinations. These special medical examinations could be the same as the annual medical examination the family physician gives his young patient.

### REFERRAL MEDICAL EXAMINATIONS

The referral medical examinations can provide information for physicians and school personnel. These examinations can result from teachers' and nurses' observations, emergency care for the sick and injured pupil, screening procedures for remediable health difficulties, posture screening, psychological testing, health counseling, tuberculin testing, and home visits by the nurse. The family physician and medical specialist responsible for these examinations will utilize many medical diagnostic procedures and will rely on health information given by parents and school personnel.

### DENTAL INSPECTIONS

Dental caries, malocclusion (irregularities of tooth position), and periodontal diseases (diseases of the gums and supporting structures of the teeth) are considered the most prevalent school health problems. Examinations by dentists, which reveal these problems, are important in the pupil's total health appraisal. Because of the frequency of such dental health problems among school children and young persons, the next chapter will be devoted to dental health. Within this chapter, dental examinations and other phases of dental health will be presented.

### SCREENING PROCEDURES

As a part of health appraisal, screening procedures are preliminary evaluations of the pupil's health status. These procedures do not take the place of the physician. Instead, they designate which school-age children need more intensive medical examinations and diagnosis.

Several questions should be raised concerning these procedures. How do they affect school health services, teacher and nurse observations, medical examinations, dental examinations, functions of school personnel following appraisal, and the nurse's home visit? When there are screening procedures, how are the results used to improve the school's lighting, seating, acoustics, and other environmental conditions? Do elementary and secondary teachers use the results of screening to alter the school day so that the pupil's total health will be benefited? How do the results of screening influence instructional methods and materials? Are school personnel prepared to give these screening procedures? How frequently shall these screening procedures occur? What role does the special education

teacher have in the procedures? To what extent should there be administrative control of these procedures?

## VISION

School personnel should realize that vision screening procedures do not indicate diseases of the eye. An oculist or ophthalmologist must diagnose eye diseases and malfunctionings. Vision screening devices will indicate some of the pupil's visual difficulties. To assist school systems in deciding the types of screening devices to use, the American Medical Association, the National Society for the Prevention of Blindness, state departments of health and education, and local ophthalmologists and optometrists can give suggestions.

The National Medical Foundation for Eye Care<sup>15</sup> indicates that vision screening identifies pupils requiring an eye examination by a physician. Vision screening is not intended to detect pupils requiring treatment, pupils with visual defects, or pupils with poor reading habits caused by visual difficulties. The diagnosis of eye diseases and defects is the function of the physician.

Vision screening should be done at the beginning of the school year so that needed medical care can be obtained before visual difficulties interfere with school progress. In the elementary school, the vision screening should be done annually. However, if the child wears glasses and is known to be under the continuous supervision of an ophthalmologist, the annual vision screening does not need to be done. In the secondary school, vision screening might be limited to students referred by teachers for vision screening and to students having had previous possibilities of visual difficulties.

*The Snellen Test* The Snellen test has several advantages. It is inexpensive, requires no mechanical equipment, is easy to administer, and can be given within 1 minute to each pupil. It requires the reading of letters, numbers, or symbols (test objects) from a distance of 20 feet. The test objects are of graduated sizes on a chart. A person with normal visual acuity should be able to identify each size at a standard distance. Each size is numbered to indicate this standard distance. Thus, if the student can read the 20-foot line at a distance of 20 feet, the student is said to have 20/20 vision. The numerator indicates the distance of the student from the chart, and the denominator the smallest line read correctly.

The Snellen chart is hung at one end of a room 20 feet long. The pupil can sit or stand at the other end of the room. The chart is artificially illuminated and daylight is excluded from the room. The sources illuminating the chart should not shine in the pupil's face.

<sup>15</sup> National Medical Foundation for Eye Care. *Identification of School Children Who Require Eye Care*. Report No. 7. New York: The Foundation, 1939. pp. 8-12.

The pupil should be familiar with the screening procedures. Both eyes are open during the test. The eye not being tested is covered with a small card resting obliquely across the nose. If a child wears glasses, the child reads the Snellen chart with his glasses *and then* without his glasses.

1. Test the right eye, the left eye, and then both eyes together.
2. Begin with the 30-foot line and follow with the 20-foot line. If the pupil fails the 30-foot line, start with the 200-foot line.
3. Use cards with circular cutouts to expose single letters so that unused parts of the chart are covered.
4. Move from one symbol to another at a speed with which the pupil can keep pace.
5. If the pupil reads correctly three of four symbols on a line, consider that the pupil can see the line satisfactorily.
6. Record results so that the numerator represents the distance from the chart and the denominator the lowest line read correctly.

After the Snellen test, pupils needing eye examinations should be selected. These pupils are (1) those who have been observed to have signs of visual difficulties, regardless of the results of the Snellen test; (2) older children who have a visual acuity of 20/30 or less in either eye; and (3) younger children (7 years or less) who have 20/40 or less in either eye.

*Other Vision Tests* Several test patterns and devices for *other vision tests* have been developed to supplement, or substitute for, the Snellen test. Considerable debate exists regarding who shall perform what tests. Local ophthalmologists and optometrists should be consulted about the use of these vision screening procedures:<sup>16</sup>

1. California State Recommended Procedure—tests for distance visual acuity, cover test, and plus sphere test.
2. Cover test—binocular coordination involving eye movements as each eye is alternately covered and uncovered.
3. Maddox rod test—special lens before one eye which disrupts fusion and indicates a line image of a spot of light seen by the other eye.
4. Massachusetts Vision Kit—visual acuity test, plus sphere test, and Maddox rod test at distance and near.
5. New York School Vision Tester—stereoscopic instrument for testing visual acuity at distance, heterophoria at distance and near, and plus sphere test.
6. Ortho-Rater—stereoscopic instrument for testing visual acuity at distance and near, heterophoria at distance and near, three-dimensional vision, and color vision.
7. Plus sphere test—significant hyperopia indicated by viewing a chart through a lens (+1.50 to +2.50 diopter spheres).

<sup>16</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, *Health Appraisal of School Children*, pp. 19-25.



8. Sight Screener—stereoscopic instrument for testing visual acuity at distance and near, heterophoria at distance and near, three-dimensional vision, and color vision.
9. Telebinocular—stereoscopic instrument for testing visual acuity at distance and near, heterophoria at distance and near, fusion, three-dimensional vision, and color vision.
10. Worth 4-dot test—test for fusion.
11. Color Vision—test for color blindness at the beginning of the junior or senior high school. Because defective color vision neither improves nor becomes worse, the test need be given only once. The Holmgren Wool test includes matching samples of wool of different colors. Color plate test involves the identification of patterns of colored dots on a background of similarly colored dots.

The effectiveness of various vision screening procedures is continuously under investigation. A comprehensive study was conducted in the St. Louis public elementary schools between February 1948 and May 1949.<sup>17</sup> Later, the Orinda, California, study was undertaken to establish adequate vision screening procedures for elementary school children. The Orinda study covered a three-year-period, 1954 through 1956, and involved 1000 elementary school children. Many screening procedures were compared with one another and against clinical examinations. The Modified Clinical Technique proved to be economical and efficient, and had the fewest over- or underreferrals. The Modified Clinical Technique includes a visual acuity test, estimate of refractive error by skiametry,<sup>18</sup> a cover test at distance and near, and inspection for organic problems. Children who passed the Modified Clinical Test could be tested annually thereafter only with the Snellen test. As a result of the Orinda study, persons were taught to give the Modified Clinical Test and the Snellen Test; clinical criteria for referral were available; annual vision screening for children with visual difficulties became a general practice; effectiveness of different screening procedures was evaluated; costs of screening were determined, and community costs of overreferrals computed.<sup>19</sup>

## HEARING

At least 3 million school-age children have some type of hearing difficulty. Severe impairment of hearing may exist in only one ear of a child, whereas moderate hearing loss may occur in both ears. Often the hearing

<sup>17</sup> Marian M. Crane, Richard Scobee, Franklin W. Foote, and Earl L. Green. "Study of Procedures Used for Screening Elementary School Children for Visual Defects: Referrals by Screening Procedures vs. Ophthalmological Findings." *Journal of School Health*, 23:1 (January 1953) and 23:44 (February 1953)

<sup>18</sup> Skiametry—objective measurement of refractive error with a retinoscope.

<sup>19</sup> Henrik L. Blum, Henry Peters, Jerome Bettman, Victor Fellows, and Frank Johnson. "Design and Evaluation of a Vision Screening Program for Elementary School Children." *American Journal of Public Health*, 49:1670 (December 1959).

difficulty is not suspected by the child, the parents, or the teacher. Thus hearing screening should be done annually in the elementary school and at least every 3 years in the secondary school.

An audiometer, preferably the pure-tone audiometer, should be selected from a list of accepted audiometers of the American Medical Association, state departments of health and education, and local otologists. School personnel giving pure-tone audiometer tests should have had a basic course in audiometry plus special training in the Individual Pure-Tone Sweep Check and the Pure-Tone Threshold Acuity Tests.

A quiet room, acoustically treated and with a quiet ventilating and heating system, is advantageous for audiometric screening. When the Pure-Tone Threshold Acuity and Individual Pure-Tone Sweep Check tests are given, the health service unit might be used. When the Group Pure-Tone Test is given to 20 pupils, a room removed from sounds of traffic, gymnasium, music and typewriter rooms, shops, cafeteria, home-making education and science laboratories, and the administrative unit is necessary. Test papers will be needed for the Group Pure-Tone Test. Teachers of first- and second-graders can fill in the test papers with the child's name, age, and grade previous to the test.

Two children can enter the room where the individual sweep and threshold acuity tests are to be given. One child awaits his turn to be screened and is placed so that he does not distract the child being screened. The other child should not be able to see the controls of the audiometer. The technician should be able to see the child's face during the entire test. Previous to the test, the technician should check the audiometer for correct calibration. Children of elementary school age should be well oriented to the audiometric screening procedures before their tests.

A pure-tone audiometer is sometimes called a discrete frequency audiometer. This audiometer has a switch directing sounds to either the right or left ear, an "interrupter" switch that can cut off sound to either ear, a set of earphones, and a regulator of the intensity of sound. The decibel, appearing on the audiogram, is the unit of sound intensity. The pitch of sound is regulated by the number of vibrations each second.

The Massachusetts Group Pure-Tone Test is a group method of auditory screening. The test can quickly indicate which children have normal hearing acuity. Children who fail the group pure-tone test should be given an Individual Pure-Tone Sweep Check Test.

The Individual Pure-Tone Sweep Check Test is given individually to a pupil and indicates the extent of hearing ability. Different tones or pitches are given at different intensities. When the pupil fails to hear certain levels of pitch at a particular screening level of intensity, the pupil is given the threshold acuity test.

The Pure-Tone Threshold Acuity Test discovers the given intensities that a pupil needs in order to hear tones of varied pitch. When the child

fails to hear certain tones at established intensity levels, he does not have acceptable hearing acuity.<sup>20</sup>

### *The Individual Pure-Tone Sweep Check Test*<sup>21</sup>

The children should be told that while being tested they are to listen for some low-pitched buzzing sounds and some high-pitched whistling sounds. If they hear a sound they should raise their hand and keep it raised until the sound ceases, then lower the hand promptly.

Now the technician should set the attenuator, frequently called the hearing loss dial, or the loudness dial, at 15 decibels. A setting of 20 decibels may be used if the noise level in the testing room does not permit testing at 15 decibels. In no instance should sweep check testing be done at 25 decibels. Either intensity setting should be maintained throughout the entire test at all frequencies.

Now set the frequency selector dial at 1000, introduce the sound by manipulating the interrupter key, and ask the child to listen for the buzzing sound and to raise his hand when he hears it. When the child indicates that he hears the sound, discontinue the sound and change the frequency setting to the next higher frequency. Proceed in this manner through all frequencies, including 4000 and down to 250. Should he fail to respond, mark the score sheet with an F for the frequency at which the deficiency was noted. After testing the right ear, proceed with the left ear in the same manner. It is advisable for the technician to vary the length of the signals at the different frequencies. A long continuous sound may be given at one frequency and a short spurt of sound produced for the next one. Another variation is to withhold the sound for a considerable length of time before giving it. This change in signals will help to eliminate errors with those children who indicate that they hear the sound although they actually do not. Dismiss each child from the room as his test is completed.

At the close of a testing period for a particular classroom group, the technician should call back each child who failed to hear the signals in any two frequencies in either ear at the setting used. The test which now should be given to these children is the Pure-Tone Threshold Acuity Test. . . .

### *The Pure-Tone Threshold Acuity Test*<sup>22</sup>

This test provides more exact information about those children who have failed the initial test and also serves as a check on the original findings. It will establish the Threshold of Hearing, which is the lowest intensity at which the tone being tested is heard. It is imperative that this test be given with care, under proper conditions, and without haste. Strict adherence to the routine of the test is essential; deviations from it will almost invariably be productive of erroneous findings. The results of this test should be permanently recorded on the audiogram and a copy should be available to the physician when referral is made.

<sup>20</sup> Texas State Department of Health and Texas Education Agency, *A Hearing Conservation Program for the Children of Texas*. Austin: Texas State Department of Health, 1957, pp. 12-18.

<sup>21</sup> *Ibid.*

<sup>22</sup> *Ibid.*

One child at a time should come to the testing room. Set the frequency dial at 1000. Silence the instrument with the interrupter key and set the hearing loss dial at 30 decibels. Present the sound by using the interrupter key for each change of intensity. After each time the sound is heard, decrease the intensity in 10-decibel steps and continue this procedure until the child cannot hear the sound. Then increase the intensity in 5-decibel steps until the sound is heard again. The intensity at which the sound is heard the softest, or with least intensity, is the *Threshold of Hearing* for the frequency tested; and the frequency threshold should be recorded on an audiogram, using the symbols "O" for the right and "X" for the left ear.

Next test each succeeding higher and lower frequency in the manner described, finding the threshold for each frequency. Frequencies to be tested are 250, 500, 1000, 2000, 4000, and 6000 cps. Drawing a line connecting the *Threshold of Hearing for each of the frequencies will represent the Threshold of Hearing* for that particular ear. The procedure then is repeated for the other ear.

The parents of all children who require a stronger signal than 20 decibels at any two frequencies in either ear should be requested to consult their physician about the child's possible impairment.

Audiograms have been included on Section 5 of the health record (Appendix A). Some family physicians and otologists suggest that audiograms, teacher and parent observation of hearing difficulties, dates of pupil attacks of tonsillitis and earaches, and findings and recommendations of examining physicians and otologists should be kept in special files in the principal's office. When the child passes the pure-tone audiometric screening procedures, his health record should contain the date of audiometric screening, the results of his test, and the technician's name.

## HEART DISEASE

During the fall of 1959, a mass screening was conducted for the detection of heart disease in 30,000 children of the Chicago Public Schools. The purpose was to assess the accuracy of an automated tape-recording unit for rapid screening of heart disease. Heart sounds were recorded on a tape recorder located in a mobile trailer unit. The heart sounds of between 250 and 300 children were recorded each day. Twenty-two seconds of tape recordings of each child's heart sounds were made. Eleven seconds of recordings included the child's heart sounds at the apex of the heart. During the last 11 seconds, the heart sounds over the base of the child's heart were recorded. A small stethoscopelike microphone was used to reveal heart sounds. Physician-readers listened and interpreted the sounds. A recall medical examination of a child was made when a child had suspicious heart sounds. Of the 30,000 children involved in the mass screening, two per thousand had proved heart disease. One case per thousand had not been previously diagnosed. The over-all accuracy of the automated tape-recording unit for rapid screening of heart disease was 91

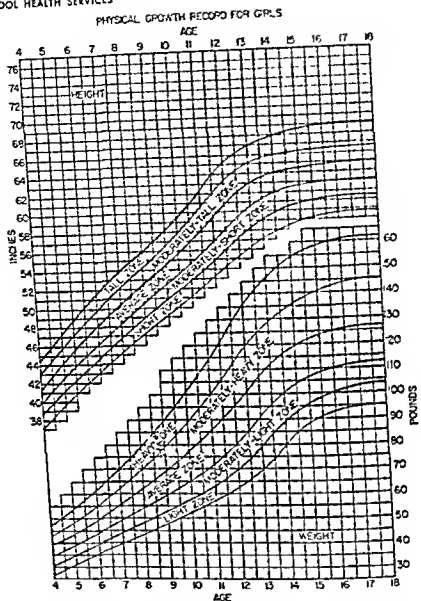


Figure 2

By permission from the American Medical Association, *Today's Health*, "Physical Growth Record for Boys and Girls," 38: 56-58 (December 1960).

## POSTURE SCREENING

Posture screening can include anterior-posterior posture, lateral posture, foot conditions, and other forms of body mechanics. The tendency in posture screening is to avoid an "over-all" postural measurement or a general posture grade. Posture screening takes each part of the body separately, such as the position of the shoulders. Another tendency is to avoid subjective or opinionated ratings.

When the physical education teacher is familiar with adapted physical education he can utilize many types of posture screening to indicate the posture conditions of some of his students. Various screening devices such as the conformatteur, spinograph, photographs, silhouettographs, motion pictures, and x-ray can be used to show anterior-posterior spinal deviations. The Wickens and Kiphuth test and "center of gravity" tests are other means of screening anterior-posterior posture. However, variations of opinions exist among research workers about the placement of the line of gravity in the lower extremity of the body, as well as the validity of many of these screening procedures.

As for lateral deviations of the spine, the Clarke-Shay scoliometer and Taut-String Test might be used. The scoliometer is placed on the back of the subject. All spinous processes are marked. The Taut-String Test consists of a string from the seventh cervical to the fifth lumbar vertebra. This string may indicate the amount of lateral deviations. Inside calipers can be used to measure the curvature, and small metric tape can be used to discover the amount of deviation. Both of these screening procedures of lateral deviations of the spine have had numerous criticisms. Through these criticisms, investigators have been stimulated to report on further studies of lateral spinal deviations. Some of these studies are reported in textbooks on adapted physical education and posture and body mechanics.

The footprint and the angle of the external height of the arch are used to stimulate the student to seek medical care for his foot conditions. However, the height of the arch is not the only criterion used for the selection of students needing medical care. A pedograph or a homemade device using fingerprint ink can be used to take a footprint. Clarke has suggested procedures in scoring footprints and additional procedures to determine in part the functional efficiency of the feet and legs.<sup>25</sup> Research workers have described devices for indicating the relation between foot functions and body mechanics. These devices are found in textbooks of adapted physical education and of posture and body mechanics.

In Section 7, Posture Screening of the health record (Appendix A), there is a cumulative record. On this record, the teacher of adapted physical education could place the results of the posture screening and a summary of the pupil's progress in adapted physical education. Unfortunately, on most health records there are no results of posture screening. Objections have been raised to posture screening: some of the equipment is expensive, and the process is time consuming. However, from the screening, the teacher of adapted physical education can gain considerable information about defects in pupil posture.

<sup>25</sup> H. Harrison Clarke. *The Application of Measurement to Health and Physical Education* (3d ed.). Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959, pp. 171-172.

## TUBERCULIN TESTING

Negative and positive reactions to tuberculin tests can be indicators of the pupil's health status. These tests are considered by most physicians to be specific and reliable measures of susceptibility to tuberculosis. Chapter 6 has a section on tuberculosis in which tuberculin testing will be included.

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## DENTAL HEALTH

Dental caries is one of the most serious health problems of the school-age child. The incidence of dental caries among children and youth is known from comprehensive studies in every section of the United States. These studies indicate: <sup>1</sup>

Fifty percent of all 2-year-old children have one or more carious (decayed) teeth. By the time children reach school age, they have three or more decayed primary teeth.

At age 16, the average youth has seven decayed, missing, or filled teeth involving 14 tooth surfaces.

Less than 4 percent of high school pupils are free of dental decay.

## DECIDUOUS TEETH

By the time the child is 3 years old, he has 20 teeth called the deciduous, baby, first, foundation, milk, primary, or temporary teeth. These teeth consist of central incisors, lateral incisors, cuspids, first molars, and second molars.

As soon as the deciduous teeth have appeared, a child should be taught how to brush his teeth and should develop the habit of cleaning his teeth immediately after eating. His first visit to the family dentist should occur between the ages of 2 and 3 years. Dental examinations and x-rays assist the dentist to detect dental caries. It is important that there be no premature loss of deciduous teeth or their retention beyond the normal time of shedding. Permanent teeth can erupt out of position when there is early loss or late retention of deciduous teeth. Neglect of deciduous teeth is very common. Often parents do not understand the importance of the deciduous teeth because no attention is paid to early loss or late retention of these teeth, and to decay and infection.

The deciduous teeth perform the following functions. First, they assist

<sup>1</sup> American Dental Association. *Dental Health Facts for Teachers*. Chicago: The Association, 1960, p. 11.



in the chewing of food. Second, they contribute to facial development. Third, they preserve the space for the incoming permanent teeth. Fourth, they are a part of the child's speech equipment.

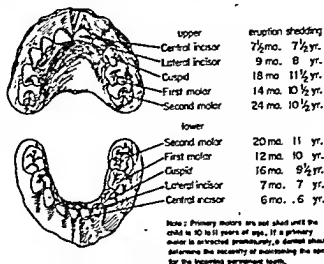


Figure 3. Eruption and Shedding of Primary Teeth

Redrawn from Dental Health Facts for Teachers, with the permission of American Dental Association.

## SIX-YEAR MOLARS

The first of the permanent teeth to appear are the 6-year molars. These teeth do *not* replace deciduous teeth but erupt in back of the second deciduous molars. They are the largest teeth in the mouth and decay easily. There are four of them. The 6-year molar is often mistaken for a deciduous tooth because it slips into the mouth before any of the back teeth appear. To locate the 6-year molar, find the exact middle front space between the two center teeth and count backward either right or left, on the upper or lower jaw. The sixth tooth from the center is the 6-year molar, provided that no teeth are missing. When a 6-year molar is lost, the contour of the face is affected, other teeth tend to "drift," and dental caries, malocclusion, and pyorrhea may result.

## MIXED DENTITION

During the ages 6 through 12, the roots of the deciduous teeth are gradually dissolving, while the permanent teeth are undergoing the final stages of development. When the permanent tooth is fully formed and ready to erupt, the deciduous tooth becomes loose. Lower permanent

teeth appear before corresponding teeth in the upper jaw. In some instances, there may be variations in the time of eruption of the permanent teeth in upper and lower jaws.

Occasionally, a second deciduous molar may be lost too soon. When this happens, the dentist may insert a space maintainer into the space so that there is room for the incoming second bicuspid. Dental care during the period of mixed dentition is essential. Parents may not realize that the four first deciduous molars are needed until the tenth year, and that the four second deciduous molars are needed until the twelfth year.

## PERMANENT TEETH

By the time the adult reaches 21 years of age, he should have 32 permanent teeth, 16 on the upper jaw and 16 on the lower jaw. The incisors, located in the center front of the mouth, cut food. The cuspids, located

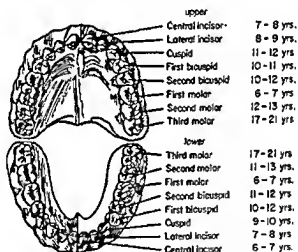


Figure 4. Eruption of the Permanent Teeth

Redrawn from Dental Health Facts for Teachers, with the permission of American Dental Association.

at the corners of the mouth, tear food. The bicuspid, with two cusps and back of the cuspids, rear and crush food. The molars, located in the back of the mouth, are used to grind food. The incisors and cuspids have one root; the bicuspid may have one or two roots. Molars have two or three roots. When the jaws are closed, the upper front teeth should slightly overlap the lower front teeth. The upper and lower molars should fit snugly together. These permanent teeth should be retained throughout life.

## STRUCTURE OF THE TOOTH

Into the bony sockets of the upper and lower jaws are the hard, calcified structures—the teeth. A tooth is divided into two parts: crown and root. The crown appears above the gum and is separated from the root by the neck of the tooth. The root anchors the tooth to the jawbone. The crown consists of enamel, dentin, and pulp cavity. The hard, glistening substance that covers the crown is the enamel. Below the enamel is an ivorylike substance which forms the body of the tooth. This is the dentin. The hollow space in the center of the tooth is the pulp cavity. This cavity contains nerves, blood vessels, and lymphatics.

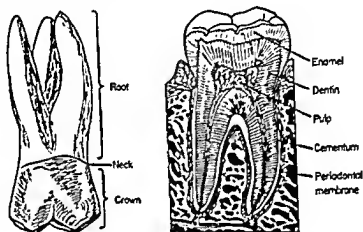


Figure 5. The Structure of the Teeth

Redrawn from Dental Health Facts for Teachers, with the permission of American Dental Association.

The root consists of the periodontal membrane, cementum, dentin, and pulp cavity. The periodontal membrane acts as a shock absorber as the teeth come together in the chewing process. Also, many diseases of the teeth have their origin in the periodontal membrane. The cementum is a thin layer of bony tissue covering the root of the tooth, between the periodontal membrane and the dentin.

## DENTAL EXAMINATIONS

One of the most important phases of the health appraisal of a pupil is the dental examination. This type of examination is for the purpose of diagnosis and can be performed only by a dentist. Two types of dental examinations will be discussed here: the family dentist completing the

dental examination in his private office, and the dentist completing the dental examination on school premises.

Because of the incidence of dental caries among children and youth, frequent and regular visits to the family dentist are necessary each year. These visits have a number of advantages. Tooth defects and dental diseases can be detected and corrected in their early stages. Irregularities in the growth of teeth *can be observed and corrected by the dentist*. Pain can be prevented by early detection and correction of defects and diseases. Cost of dental care is considerably reduced when there is early correction of diseases and defects.

## X-RAY

The family dentist's best means of assuring proper treatment is the use of x-ray equipment. Tiny cavities, not visible through ordinary examinations, can be detected by the x-ray. New decay beneath old fillings and abscessed teeth can be found. In addition, the x-ray pictures can reveal an impacted tooth, a tooth with crooked roots, and a hidden permanent tooth that cannot erupt. Early periodontal disease can be disclosed by x-ray. The full-mouth x-ray can detect early defects and diseases so that correction can be made promptly.

## TOPICAL FLUORIDE APPLICATION

Topical fluoride applications may not halt decay already started but will help to prevent new decay. Fluoride solutions should be applied, by the dentist, to the teeth of children who have not had access to fluoridated drinking water supplies since birth. Before placing the fluoride solution on the teeth, the dentist cleans and dries the child's teeth thoroughly. The dentist may use sodium fluoride or stannous fluoride. The fluoride solution is applied and is allowed to dry on the tooth surfaces. Four applications of a 2-percent solution of sodium fluoride may be given at intervals of from two to five days. These applications are given at the ages of 3, 7, 10, and 13 years. Recently some dentists have used one application of an 8-percent solution of stannous fluoride at 6-month or annual intervals.<sup>2</sup> Research studies show that topical fluoride applications given to large groups of children have reduced the incidence of decay in new teeth among these children by about 40 percent on the average.<sup>3</sup>

## ORAL EXAMINATIONS IN THE SCHOOLS

In the fall of 1959, a survey of the dental programs in public, private, and parochial schools of the elementary and secondary school levels was made by the American Dental Association. The schools represented dif-

<sup>2</sup> Wesley Young, "Guidelines to Successful Dental Health Programs for Children: Prevention," *Journal of School Health*, 31:187 (June 1961).

<sup>3</sup> American Dental Association, *op. cit.*, p. 15.

ferent geographic areas of the United States, school systems of different sizes, and both elementary and secondary school levels. Of the 3266 schools participating in the survey, 57.3 percent had oral examinations by dentists. These examinations were given by dentists within the schools, as reported by 88.2 percent of the schools. In the majority of schools, the oral examinations were given free by the dentists. Referral for dental service was more commonly reported in the large cities. The referral was either to the family dentist or to some community facility for oral examination and dental treatment. One in every four schools provided prophylaxis service; this service was more frequently reported by the large city school systems than by school systems of other sizes. Most of the schools providing prophylaxis services did so in their own clinics. However, 25.2 percent of the schools sent the children to offices of private dentists. Only one school in ten gave topical fluoride applications. This ratio of topical fluoride applications was consistently found among schools in communities of all sizes. Fillings were provided by one school in four (25.4 percent). More than one third of the schools reported that the fillings were provided by private dentists in their offices. Several community agencies pay for dental care in school programs, and no one agency dominates. Only 20.7 percent of the schools reported that dental services were financed by local boards of education.<sup>4</sup>

## DENTAL INSPECTION

Dental inspection is a cursory observation of the mouth and teeth, with the use of a hand mirror and explorer in good natural light or specially designed artificial light. It is not a diagnostic procedure. Dental inspection should not be confused with the regular dental examination given by the dentist in his office. The results of dental inspection can (1) estimate group dental needs, (2) aid in planning to meet group needs, and (3) provide a basis for evaluating dental programs over a period of years. Dental inspection in schools can persuade parents that there is need for regular dental care by family dentists.<sup>5</sup>

## COMMON DENTAL HEALTH PROBLEMS

Dental health problems are classified as dental caries, periodontal diseases, malocclusion, dental fluorosis, and accidents that injure the teeth or supporting tooth structures. At least 95 percent of Americans suffer from tooth decay at some time during their lives.

<sup>4</sup> Melvin L. Dollar and Perry J. Sandell, "Dental Programs in Schools," *Journal of School Health*, 31:3 (January 1961).

<sup>5</sup> Frances A. Stoll, "Dental Health Inspection in the Schools," *Journal of School Health*, 31:55 (February 1961).

## DENTAL CARIES

Dental caries, commonly called tooth decay, is a localized disease process that destroys tooth structure. Because it is destructive and progressive, dental caries produces cavities in teeth.<sup>6</sup> By the time children reach the ages of 12 or 13, they have five permanent teeth attacked by caries. Children eat sugar on their morning cereal, sugar-sweetened crackers with their school midmorning milk, have cookies for lunch, peanut butter and jelly sandwiches after school, cake for dinner, and a handful of dried raisins before going to bed. Average per capita consumption of sugar in a year in the United States is about 100 pounds.

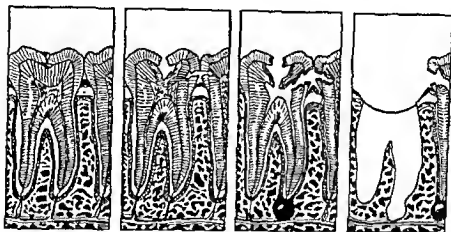


Figure 6. Progress of Decay

Left to right: (1) Early stage of dental decay. The enamel has been penetrated. (2) The softer dentin has been attacked. (3) The pulp has been killed and an abscess formed. (4) The molar is extracted. The bicuspid is abscessed. Redrawn from *Dental Health Facts for Teachers*, with the permission of American Dental Association.

There are four factors necessary to produce dental caries: mouth bacteria, fermentable carbohydrates, such as sugars, dental plaque, and a susceptible tooth surface. The bacteria thrive on fermentable carbohydrates, breaking down the sugars and producing acid. The dental plaque is a combination of saliva components, bacteria, and food debris. It is a gluey, gelatinlike substance. The plaque adheres to the teeth, collects the acid, and holds the acid against tooth surfaces. The acid attacks the tooth surfaces and begins to dissolve tooth enamel. The dissolution of the enamel is the beginning of tooth decay. When a child has susceptible tooth surfaces, the sugar is converted into the acid within a few minutes. The acid begins to dissolve the enamel. The destruction of the tooth enamel con-

<sup>6</sup> American Dental Association, *op. cit.*, p. 11.

tinues for 20 more minutes, then gradually tapers off. The more frequently sugar is eaten, the more rapidly caries will develop.<sup>7</sup>

In teeth susceptible to dental decay, there are many pits and fissures, which are structural flaws of the teeth. Dental decay begins in a fissure or pit or in an area of the tooth surface that is hard to clean. Left undetected, the decay will penetrate the enamel and reach the dentin. The decay progresses rapidly into the dentin and reaches the pulp cavity. When the pulp cavity becomes infected, an abscess may form either within the tooth or at the tip of the root. Soreness, swelling, and pulsating pain accompany the abscess; usually the tooth must be removed. Often the adjoining teeth are affected with caries, and abscesses become evident.

There is definite need for teaching about dental caries in our schools and about the relation of daily sugar intake to dental caries. In order to reduce sugar intake, elementary and secondary schools should be aware that the availability of candies and sweetened soft drinks in lunchrooms and through various types of dispensing machines does *not* reduce sugar intake. For this and other reasons, the Council on Food and Nutrition of the American Medical Association, the American Dental Association, and the National Congress of Parents and Teachers have statements urging school personnel not to sell candies and sweetened soft drinks on school premises. These statements are found in Chapter 9.

## PERIODONTAL DISEASES

Periodontal diseases are diseases of the gums and other supporting structures of the teeth. Periodontal fibers, which hold the teeth in place, and the bone surrounding the teeth are the supporting tooth structures. The most common types of periodontal diseases are gingivitis and pyorrhea.

In *gingivitis*, the gums become tender, inflamed, and swollen. They bleed easily and stand away from the teeth. If gingivitis is not treated before it reaches an advanced stage, dental treatment is difficult. Some of the causes of gingivitis are an accumulation of calculus in the form of hard deposits around the neck of the tooth; food packed between the teeth and mouth breathing; and mechanical injuries caused by poor tooth brushing and improper use of dental floss.<sup>8</sup>

*Pyorrhea* (periodontitis), which is a result of neglected gingivitis, affects the periodontal membrane and supporting structures of the teeth. As the inflammation spreads, the gums withdraw from the teeth and form "pockets" that become filled with bacteria, food debris, and pus. If the pyorrhea is not treated, the bony support will be destroyed. Without bony support, the teeth become loose.

<sup>7</sup> Richard L. Mathewson, "Preventive Dental Health in the School," *Journal of School Health*, 31:262 (October 1951).

<sup>8</sup> American Dental Association, *Your Guide to Dental Health*, Chicago: The Association, 1942, p. 10.

*Vincent's angina* (trench mouth) is a disease characterized by extreme inflammation and soreness of the gums. It is accompanied by ulceration of the gums, pain, bleeding, increased flow of saliva, and a foul odor. Unhygienic mouth conditions and lowered resistance of mouth tissues tend to increase the spirochetes and bacilli that are associated with the disease. Early professional dental care and antibiotics in the treatment of Vincent's angina eliminate the possibility of fatal consequences.

## MALOCCLUSION

During the time the deciduous teeth are being shed and the permanent teeth are erupting, malocclusion most commonly occurs. An investigation of more than 1000 Michigan school children indicated that about 30 per cent of the children of all age groups had malocclusion.<sup>9</sup>

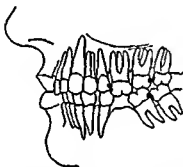


Figure 7. Effects of Loss of a Permanent Molar

Redrawn from Dental Health Facts for Teachers, with the permission of American Dental Association.

Irregularities of tooth position and occlusion (fitting together of the teeth on closing of the jaws) is malocclusion.<sup>10</sup> Facial deformities can result from malocclusion.

There are two general causes of malocclusion: inherited and acquired. Four factors are involved in heredity: First, deciduous teeth may be shed too early. Second, deciduous teeth may be retained too long. Third, permanent teeth may erupt before the jaws have reached their full growth sufficient to support the permanent teeth. Fourth, there may be narrow dental arches in the mouth.

The acquired causes of malocclusion are mainly bad habits. Abnormal thumb or finger sucking, tongue thrusting, lip sucking, and sleeping positions can bring abnormal pressure on the teeth and bones of the face. Poor dental care may result in early loss of deciduous or permanent teeth

<sup>9</sup> American Dental Association. *Dental Health Facts for Teachers*, p. 19.

<sup>10</sup> American Dental Association. *Orthodontics*. Chicago: The Association, 1956, p. 3.



As a result, teeth adjacent or opposite the space left by the lost teeth may drift out of position. If a deciduous tooth is lost too early, the adjoining teeth drift and reduce the space for the oncoming permanent tooth.

Malocclusion can have several harmful effects. Facial deformities can occur. Also, the child may select foods not suitable for his nutritional needs because his malocclusion interferes with the chewing of food. Speech defects may result. Later in life, periodontal diseases may develop. Irregular or protruding teeth detract from appearance and can cause social and emotional disturbances. The child or adult with malocclusion cannot accept the statement, "an attractive smile is a person's greatest asset."

Acquired causes of malocclusion can be prevented with the aid of the dentist. He can inform the patient of poor dental habits, prevent premature loss of teeth, provide space for teeth that will erupt later, and extract teeth that have been retained too long. Some of these preventive measures, however, should not be used until conditions warrant the prevention. Often the family dentist may refer his patient to an orthodontist—the dental specialist who performs orthodontic diagnosis and treatment.

The best preventive measure for malocclusion is regular dental care started at an early age and continued throughout a lifetime. Regular dental care can prevent the need for more complicated treatment at a later date.

### DENTAL FLUOROSIS OR "MOTTLED ENAMEL"

Dental fluorosis is a condition in which the enamel of the permanent teeth has varying degrees of stain, ranging from chalky white to gray, brown or black, depending on the concentration of fluorine in drinking water. In severe instances, the enamel may be pitted. The teeth lack luster and have a chalky or dead appearance.

Sufficient evidence is available to indicate that dental fluorosis is caused by excessive amounts of fluorine in water. The desirable concentration of 1 part of fluorine to 1 million parts of water will protect against tooth decay and will not produce fluorosis.

Dental fluorosis occurs during the period when the enamel of the tooth is being formed, that is, before the eruption of the tooth into the mouth. At this time the enamel has no protective mechanism and is deprived of all defensive mechanisms that protect it from destructive agents. Thus dental fluorosis is produced from birth to 7 or 8 years of age. If a census of all state health departments in the United States have made a census of communities in which the water sources contain natural fluorides. There are some 1900 communities with at least .7 part of fluorine per million parts of water.

## HOW EFFECTIVE IS YOUR TOOTH BRUSHING?

In order to demonstrate how effective is the method of tooth brushing used by high school students, the following experiment can be made.

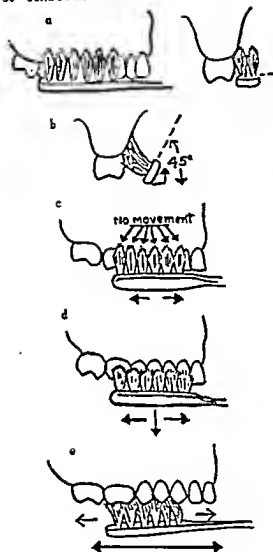
1. A stock solution of basic fuchsin is made by dissolving 6 grams of dye in 100 cc. of 95-percent ethyl alcohol.
2. At the time of the experiment, 8 to 12 drops of the stock solution are added to 2 tablespoons of water in a paper cup.
3. The student rinses his teeth thoroughly with the stock solution (basic fuchsin) for half a minute and spits the solution back into the cup.
4. The student rinses his mouth and teeth thoroughly with fresh water and spits the water into the paper cup.
5. All contents of paper cups are poured down the drain.
6. The student uses a hand mirror to see the dental plaque (saliva components, bacteria, and food debris) on the tooth surfaces and tongue, which appear red.
7. Without a dentifrice, the student uses a soft bristle brush to remove as best he can all the red stains from his teeth.
8. The student uses a hand mirror to inspect the amount of basic fuchsin on his teeth.
9. The student rinses his mouth with fresh water and spits the water into the paper cup.
10. The student examines his teeth with a mirror.
11. The student again rinses his mouth with the basic fuchsin.
12. The student examines his teeth to see if any dental plaque remains on them.

If students repeat the experiment daily they will witness the growth of bacteria, the production of acid in the mouth, and the accumulation of food particles—all indicating the necessity for tooth brushing after eating. Also, students will realize the importance of thorough tooth brushing and how quickly the dental plaque (saliva components, bacteria, and food debris) forms on the teeth. The dental plaque and acid dissolve tooth enamel and start tooth decay.<sup>12</sup>

## TOOTH BRUSHING

Demonstration of tooth brushing can be given by the dental hygienist or teacher. A family dentist or dental hygienist may instruct the teacher in correct tooth brushing. The method pictured in Figure 8 is used by periodontists and dental hygienists.

<sup>12</sup> Sumter S. Arnim and Perry J. Sandell. "How to Educate High School Students in Oral Hygiene." *Journal of Health, Physical Education, and Recreation*, 31:33 (October 1960).



1. Upon the upper jaw, insert the brush with the bristles pointed upward and place the bristles against the sides of the gums (a).
2. Turn the brush so that the bristles press firmly against the side of the gums (b).
3. Start the massage by vibrating the handle of the brush in the horizontal direction but do not allow the bristles to rub over the surface of the gums (c).
4. As the gums are massaged, the bristles will move toward the biting surfaces of the teeth. This will work the bristles in between the teeth and will clean the teeth (d).
5. Work from the right upper outside molars to the left upper outside by changing brush positions at the bicuspids, cuspids, and incisors.
6. On the lower jaw, insert the brush with bristles pointed downward and repeat the procedures described for the upper jaw.
7. Biting surfaces of the teeth should be cleaned after both outside and inner surfaces are brushed (e).

Figure 8

By permission from "A Proper Gum Massage and Tooth Brushing Method," Periodontic Section, Oral Medicine Department, University of Pennsylvania. Form 164-E.

To demonstrate the correct tooth brushing, a toothbrush with a "... flat brushing surface, firm bristles and a head sufficiently small to permit access to all surfaces of the teeth"<sup>13</sup> can be used. Care of the toothbrush as well as the use of the brush should be taught. To demonstrate correct tooth brushing, the teacher can use models of teeth. Children can be encouraged to bring their toothbrushes for tooth brushing after the noonday school

<sup>13</sup> American Dental Association. *Dental Health Facts for Teachers*, p. 13.

meal and snack. A mirror can be placed in front of the child while he practices. The tooth brushing method may be the "Modified Stillman Method," involving gum massage as well as the removal of food particles between the teeth. Dentists recommend massaging the gums and brushing the teeth after eating. It is possible to use two toothbrushes, alternating the brushes to allow the bristles to dry. When the bristles have lost their stiffness, the brush should be changed. The jaws of the mouth can be divided into separate areas. The procedures shown in Figure 8 can be repeated three times on each surface area. These procedures must be carried out on the inner as well as the outer surfaces of the teeth. When the upper jaw is finished, the same procedures can be repeated on the lower jaw.

After the teeth are brushed, the mouth should be rinsed thoroughly with lukewarm water forced back and forth between the teeth several times. The toothbrush should be thoroughly washed after use. The toothbrush can be hung to dry in the sunshine.

## WHAT CAN THE TEACHER DO?

When possible dental health problems have been observed among students, what can be done? The teacher should be aware of the school system's procedures following the teacher's observations. Parents of children of elementary school age should be informed of signs of possible dental health problems by parent-teacher or nurse-parent conferences. Secondary school students can become acquainted with their dental health problems during teacher-pupil conferences. Parents should be encouraged to take the younger child to the family dentist, but secondary school pupils should be encouraged to seek the care of their family dentists. The teacher should inform the nurse, who can check the dental care given by the dentist. School personnel should be alert for further possible dental health problems among pupils. Teachers should evaluate their own dental health practices and should check the date of their last visit to their own dentists (Chapter 11). School personnel can cooperate with PTA groups by removing soft-drink and candy-vending machines from the school premises (Chapter 9). School personnel should be familiar with school nutrition and its promotion of dental health (Chapter 9). Elementary teachers and teachers of health education can include dental health in direct health instruction (Chapter 15). All teachers can assist in promoting dental health by:

1. Encouraging tooth brushing after the noonday school meal and snacks
2. Encouraging proper nutritional habits
3. Discouraging concentrated sugars in the diet
4. Discouraging thumb sucking and nail biting

5. Discouraging placement of pencils, pens, and other objects between teeth
6. Warning against cracking nuts and biting hard candy with the teeth

## FLUORIDATION OF WATER SUPPLIES

In the past 20 years there have been more than 3000 clinical and experimental reports on the biological effects of fluorides. These reports substantiate the values of 1 part of fluorine to 1 million parts of water as a means of reducing dental caries.<sup>14</sup> Also, these reports indicate that there is no health hazard to human health at the recommended level of 1 part of fluorine to 1 million parts of water. Fluoridation of public drinking water does not affect the color, odor, or taste of the water, and costs about 10 cents per person a year. The legality of adding suitable fluorine compounds to public water has been sustained by court decision.<sup>15</sup> The courts of 13 states in which fluoridation was contested have upheld fluoridation as a valid public health measure involving no infringement on the individual citizen's liberties.<sup>16</sup>

More than 2500 American communities with a population of more than 46 million have fluoridation of drinking water. Natural fluorides are found in the drinking water of more than 7 million people in the United States.

Grand Rapids, Michigan, and Newburgh, New York, are two of the many communities used to validate the reduction of dental caries among children having access to fluoridated water. In 1945, 1 part of fluorine was added to 1 million parts of fluoride-free lake water used by the people of Grand Rapids. Two groups of children of the same age level were compared: those born in Grand Rapids prior to fluoridation and those born in Grand Rapids having access to fluoridated water since birth. The children who had access to fluoridated water had 65-percent less dental caries than the other children had. In Newburgh, children drinking fluoridated water since birth had 60-percent less dental caries, over a period of 10 years, than children in Kingston, New York, who did not use fluoridated water.<sup>17</sup>

The reports of the World Health Organization Expert Committee on Water Fluoridation and the repeated support of the American Dental Association, American Medical Association, National Research Council,

<sup>14</sup> Gordon Fair, "New Factors in Man's Management of His Environment," *Royal Society of Health Journal*, 79:524 (September-October 1959).

<sup>15</sup> James A. Tobey, "Public Health and Religious Freedom," *American Journal of Public Health*, 44:1293 (October 1954).

<sup>16</sup> Edward B. Johns, Wilfred C. Sutton, Lloyd E. Webster, *Health for Effective Living* (3d ed.). New York: 1962, pp. 182-191.

<sup>17</sup> Gordon Fair, *loc. cit.*

United States Public Health Service, and other qualified professional health groups should convince the skeptics that fluoridation of drinking water supplies is a means of reducing dental caries among children.

## EVALUATION OF DENTAL HEALTH CONSUMER PRODUCTS

For at least 30 years the Council on Dental Therapeutics of the American Dental Association has been evaluating every type of dental health product, including tooth pastes, tooth powders, and mouthwashes, that make therapeutic claims in advertising. Dentists as well as nonprofessional health personnel have profited from this information. These evaluations are given in *Accepted Dental Remedies*, first published in 1934. In addition, other publications, such as *Consumer Reports* and *Today's Health*, have familiarized nonprofessional health personnel with discrepancies existing in some advertising of dental health products.

Many questions are asked concerning dentifrices. A dentifrice can assist in the cleaning of the teeth, but it does not do the job of thorough tooth brushing. Actually, it is not necessary to use a dentifrice. Some people prefer a mixture of powdered table salt (one third) and baking soda (two thirds) as a dentifrice, or either may be used separately.

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## NONREMEDIAL HEALTH CONDITIONS

Ever since mankind has recorded his illnesses, there is evidence of health conditions with unknown origins and no known treatments. Historical persons such as Julius Caesar and Alfred the Great were epileptics. A century ago, many children and adults had diabetes, cerebral palsy, glaucoma, structural scoliosis, and muscular dystrophy, but little was known about these conditions. Today, some are controlled by medical care; others have neither a definite known cause nor a treatment. The conditions have *no* relation to the causative agents of diseases, such as bacteria. Rather, they are caused by a malfunctioning of some part of the human body. Medical science continuously probes why these non-remediable health conditions exist, how best to provide care for victims of the conditions, and what is involved with each.

Of utmost importance in assisting any child with a nonremediable health condition is the acceptance of the pupil by the teacher and his classmates. A student having diabetes, for example, should have a sense of belonging within his group. To foster this acceptance, the teacher has three tasks. First, the other pupils, regardless of age level, should realize that these health conditions can occur to anyone. Second, these pupils should be informed about the different types of nonremediable health conditions so that misinformation cannot overrule specific health facts. Third, they should accept that they, too, may have or will have a nonremediable health condition. When there is an epileptic pupil in the class, his classmates should be aware of the epileptic's behavior during a seizure and should be able to assist him so that he does not injure himself. Persons who are aware of their nonremediable health conditions can be better adjusted to society than can those who are unaware of their health problems. Some of these nonremediable health conditions are diabetes mellitus, epilepsy, cerebral palsy, vision defects, hearing defects, severe posture conditions, and muscular dystrophy.

## DIABETES MELLITUS

There are more than 1 million undetected cases of diabetes mellitus in the United States. A diabetic cannot change carbohydrates into energy or store them for future use. These inabilities are caused by lack of insulin, which is produced in the Islands of Langerhans, located in the pancreas. In many diabetics, the Islands of Langerhans do not produce sufficient insulin; in others, the Islands of Langerhans may produce insulin but are not able to release it. In still other diabetics, the body's demands for insulin may be greater than normal.

### SIGNS

Everyone should be aware of some of the signs of possible diabetes. These signs, called to the attention of the family physician, may assist the physician in the diagnosis of the condition. The physician, however, is the only person who can determine whether the person has diabetes. Some signs of *possible* diabetes mellitus:

- Drinking large quantities of water to quench the thirst
- Frequent urination
- Constant hunger
- Loss of weight and strength
- Dry skin
- Pains in the legs
- General nervous irritation
- Boils on the skin at times
- Sugar in the urine when a urinalysis is performed
- Sugar in the blood when a blood test is given

In some cases there may be no signs of possible diabetes. The person may not feel quite well, may tire easily, and have infections that are slow to heal. An eye examination by an ophthalmologist may reveal unusual eye conditions related to diabetes.

### MEDICAL DETECTION PROCEDURES

Physicians have many procedures for determining the presence of diabetes mellitus. The procedures include a thorough medical examination, analysis of the urine, analysis of the blood for sugar content, the glucose-oxidase skin test, and the glucose-tolerance test. The last test measures the ability of the normal liver to absorb and store large quantities of glucose.

### CONTROL OF DIABETES

Once the physician has determined the presence of diabetes mellitus, he places the diabetic under the four basic essentials to *control* diabetes mel-



litus. These basic essentials are continuous medical supervision, diet, exercise, and medication. Throughout the life of the diabetic he must maintain close and intelligent cooperation with his physician. Contrary to popular misconceptions, the diabetic eats the same foods as those eaten by the rest of the family. Daily diet may include lean meats and fish, cheese, eggs, vegetables, fruits, breads, cereals, milk, and butter. Some diabetics, however, need a more restricted diet, which will be determined by the physician. It is important that the diabetic have food at regular times, such as a three-meal-a-day schedule. But the daily diet should not contain extra nourishment; it should remain the same from day to day.

Exercise plays an important role in the control of diabetes mellitus, because muscular activity assists in the conversion of carbohydrates into energy. In elementary and secondary schools, the diabetic student learns skills associated with individual and dual sports so that he can not only enjoy these sports during his schooling but also continue to engage in them as an adult. Some of these sports are tennis, golf, badminton, swimming, bowling, and archery. The diabetic should take about the same amount of exercise each day.

In 1921, Banting and Best isolated insulin from animal pancreas. Today, insulin administered to diabetics is a preparation made from the pancreas of animals. It is given *by injection* to enable the diabetic to utilize carbohydrates. In addition to regular insulin, there are longer-lasting types of insulin mixtures that reduce the frequency of injections. Sometimes these longer-lasting types of insulin mixtures are used alone, sometimes in combination with regular insulin. Since 1957, chemicals or oral compounds have been used for mild cases of diabetes mellitus; they reduce the blood sugar to safe levels without the injection of insulin. The oral compounds encourage the self-active insulin-producing parts of the pancreas to secrete the necessary quantities of insulin.

In addition to medication, a well-regulated life and good body hygiene are important. The diabetic's schedule should be about the same every day, although an unusual situation, such as sickness, may create changes in his diet and medication. To maintain good body hygiene, he should take every precaution to prevent infection from cuts, bruises, or other injuries. Children should receive immediate American Red Cross First Aid for wounds that might develop infection.

## COMPLICATIONS

The four basic essentials: medical supervision, diet, exercise, and medication must be followed every day; otherwise complications result. Diabetic acidosis or diabetic coma occurs when sugar is not burned because of an insufficient amount of insulin in the body. Signs of diabetic acidosis are nausea, vomiting, fruity breath, flushed and dry skin, deep and

labored breathing, and drowsiness. The physician should be contacted and the diabetic should go to bed. The diabetic should be kept warm and drink a cupful of hot liquid. The easiest way for the diabetic to avoid diabetic acidosis is to continue his insulin injections or his oral compounds as prescribed by his physician.

An insulin reaction occurs when the diabetic takes too much insulin or too many of the oral compounds, or does not eat enough food or waits too long to eat after taking insulin, or takes too much exercise. In other words, there is not enough sugar in the diabetic's blood. Signs of insulin reaction are mild hunger, sweating, dizziness, trembling, blurred vision, mental confusion, and shallow breathing. Most diabetics recognize the early signs of the reaction and take measures to prevent its developing into anything more serious. Eating a little sugar or drinking fruit juice are common ways to prevent insulin reaction. Physicians urge diabetics to carry lump sugar with them, as well as an identification card stating that they are diabetics. To avoid an insulin reaction, the diabetic should eat at regular hours and take his medication at the same time each day.

### MISCONCEPTIONS

Teachers should be aware that many misconceptions exist concerning diabetes mellitus. The teacher should be acquainted with these facts:

1. Diabetes is *not* a contagious disease.
2. Diabetes is *not* caused by eating too many sweet foods.
3. Diabetics can marry, can be employed for most occupations, and can buy life insurance.
4. Diabetics can be useful citizens living a full life.
5. There are more instances of diabetes among married women than among single women. There are more instances of diabetes among women than among men.
6. Adults who are overweight should realize that their chances of becoming diabetics are greater than those of adults who are underweight or who maintain a normal weight.
7. Heredity plays an important role in diabetes. If both parents are diabetic, all children may be diabetics. If one parent is diabetic and the other parent has a family history of diabetes, there is a 50-percent chance that the children may become diabetics. If neither parent has diabetes but there are histories of diabetes in the family, the children have a 25-percent chance of becoming diabetics.
8. Persons who have had diabetes since childhood may develop severe visual difficulties.
9. Diabetes in juveniles is usually severe.
10. Medical detection procedures, new sources of insulin, methods of controlling diabetes, and facilities to assist diabetics are continuously being improved.

## WHAT CAN THE TEACHER DO?

A teacher has observed certain signs of possible diabetes among her pupils. What can be done to assist such pupils? The teacher should be informed of the school system's procedures for referral medical examinations following teacher observations. Parents of elementary school children should be informed of signs of possible diabetes and encouraged to take the child to the family physician. The older student, in secondary school, can become acquainted with the possible signs of diabetes during a teacher-student conference. These adolescents should be encouraged to seek medical care from their family physician. Usually the nurse is sought out, and the follow-through begins. The teacher of the child or adolescent with diabetes should then be informed that her student is receiving medical care. Also, the teacher should be alert for diabetic acidosis or coma and insulin reaction.

The teacher can assist the diabetic pupil by:

1. Encouraging him to participate in physical education activities
2. Being aware that the diabetic pupil can take care of himself
3. Understanding the reasons for accessibility of fruit, candy, and sugar to the diabetic pupil
4. Encouraging meticulous health habits
5. Preventing unusual physical exercise
6. Teaching facts concerning diabetes in direct health instruction
7. Giving American Red Cross First Aid to injuries occurring to the diabetic pupil

It is of utmost importance that the teacher become familiar with the basic facts concerning diabetes; she will then be able to eliminate prejudice through direct health instruction.

## EPILEPSY

Epilepsy (Greek, "seizure") has been defined as chemical disturbances of nerve cells leading to certain irregularities in the electrical currents of the brain. The cause is unknown. About 1 million persons in the United States have some type of epilepsy. Among the types found in the elementary and secondary schools are the petit mal and the mild form of grand mal epilepsy.

There are conditions that may induce seizures in the epileptic. An injury to the brain before or during birth, severe injury to the head, tumor in the brain, infection settling in the brain following a disease such as measles, malfunctioning of some part of the body and affecting the brain, and emotional upsets are some of these conditions.

In 70 percent of the epileptics, the first signs of epilepsy usually appear before the age of 20. The first two years of life and adolescence are peak

ages for the development of seizures. Most children outgrow the seizures.

Epilepsy is generally divided into two forms: "idiopathic," or genuine, epilepsy and "symptomatic" epilepsy. If there is no evidence of specific brain damage, the case is called "idiopathic" epilepsy. If there is evidence of specific brain damage, the case is called "symptomatic" epilepsy.

### PETIT MAL

Petit mal or minor epilepsy occurs frequently but is often overlooked. The epileptic has a loss of memory. He may "blank out" during conversations or directions given to him. The epileptic may have a nodding spasm, may twitch his eyebrows, may stare vacantly, or may blink a few times. Then he continues whatever he was doing. The seizure lasts only a few seconds. Seizures may occur daily and may disappear with age, but it is possible that epileptics with petit mal may develop grand mal epilepsy.

Teachers can assist the pupil with petit mal epilepsy by:

1. Being patient with the pupil during periods when he "blanks out"
2. Preventing injuries to the pupil that might occur during the seizure
3. Limiting the class size in physical education
4. Supervising the epileptic closely in science and homemaking laboratories, in physical education and industrial arts classes, and in elementary school group activities

### GRAND MAL

Grand mal or major epilepsy consists of four phases. The "aura," or first phase, consists of signals warning of the oncoming seizure. The signals may include the epileptic's seeing strange lights, having pains in the limbs and stomach, crying or groaning, smelling strange odors, and trembling. The *second phase* shows more pronounced behavior. The epileptic may become pale, lose consciousness, and fall; may stiffen his body; and may undergo a series of jerks or convulsions in which his arms and legs move spasmodically. He may cease to breathe momentarily. Saliva may appear on his lips. This second phase lasts only a few minutes. The *third phase* quickly follows the second phase. The epileptic may roll his eyes, may clamp his teeth shut, may bite his tongue or cheek, may urinate or have a bowel movement, and feel no pain. The third phase lasts only a few minutes. Then the *afterphase* occurs. The epileptic sleeps deeply for hours. He is relaxed. When he awakens, he may return to his usual self or may complain of a headache and nausea. Sometimes his muscles may be sore. The seizures may vary in behavior and frequency.

It is imperative that teachers be aware of the epileptic's actions during a grand mal seizure and assist him by:

1. Providing a place where he can lie down, perhaps on a cot behind a screened corner of the classroom
2. Staying with him during the seizure

3. Turning his head to one side
4. Moving objects out of his way as his legs and arms move spasmodically
5. Guiding but *not* restraining his movements
6. Placing a knotted cloth or tongue depressor between his bicusps so that he will not bite his tongue or cheek
7. Allowing him to sleep during the afterphase
8. Notifying the parents, if he is a child of elementary school-age, that he has had a seizure so that the parents may take the child home where he can have additional rest
9. Supervising him carefully during physical education activities
10. Avoiding tension within the classroom
11. Informing his classmates through direct health instruction of the basic facts concerning epilepsy.

The epileptic pupil should have a sense of belonging within his group. To foster this acceptance, the teacher must let the epileptic's classmates know how he may behave during a seizure and what procedures they can follow to assist him when he undergoes the seizure. Pupils in the intermediate elementary school grades are old enough, if well instructed, to assist an epileptic who has a seizure on the school bus or on the playground.

### ADDITIONAL FACTS

Other types of seizure are the psychomotor and Jacksonian. The psychomotor seizure is the most difficult for the physician to diagnose. It varies from one patient to another and may resemble petit mal or grand mal epilepsy. The Jacksonian seizure has been described as a modified grand mal. The seizure may indicate that a certain portion of the brain surface is the source of the attack.

Medication, prescribed by the physician, will usually greatly lessen the severity and frequency of seizures. Medical science has provided anticonvulsant drugs that control seizures and that are not habit-forming. Diet, if it needs to be regulated, will be prescribed by the physician. Important to the care of the epileptic is the acceptance of the epileptic by his family, friends, and associates.

Basic vital facts have proved the acceptability of the epileptic as a member of a group. An epileptic, under continuous medical supervision, can be employed for most occupations. He has a nonremediable health condition which he can learn about and accept, and he can adjust to the situation. It is even possible that the seizures may gradually become less with proper medical care. Most epileptic pupils can attend school and college. There is evidence that accidents occurring as a result of seizures are very low. Epileptics can marry and have children. Heredity is no greater

a factor in epilepsy than in diabetes. Medical science is continuously investigating the causes of the spontaneous seizure and the best methods of medical care.<sup>1</sup>

## CEREBRAL PALSY

There are at least 190,000 children in the United States with cerebral palsy. Cerebral palsy is defined as a disturbance of motor functions resulting from neuromuscular conditions. Malfunctioning of a single extremity or combination of extremities results. Speech, hearing, and vision may be involved. These neuromuscular conditions become evident as spasticity, rigidity, athetosis, and ataxia. *Spastics* constitute 60 percent of those afflicted with cerebral palsy. There is restricted movement caused by contracture of the muscle. If the child does not receive training, permanent contractures may develop. In the *rigidity* type of cerebral palsy, the muscles are in semicontraction, causing slowness of motion. *Athetoids* may have bizarre, purposeless movements and grimaces. The willed motion of muscles is distorted by an excess of unpredictable involuntary motion creating uncontrollable movements. Voluntary movements are normal. In *ataxia*, there is a disturbance of balance and directional control caused by some loss of kinesthetic sense. In quadriplegia, all four limbs are affected. In hemiplegia, an arm and leg on one side are involved. In paraplegia, both legs are affected.

In approximately 50 percent of the cases of cerebral palsy, defects of the eyeball occur. Loss of hearing, too, often accompanies the palsy, but partial loss of hearing must be watched for; it may be overlooked if the child is able to read the lips of the speaker. In 70 percent of the occurrences of cerebral palsy there are speech problems. Inability to control the tongue, lips, or breathing mechanism is one of the causes of speech problems. The victim of cerebral palsy may have total physical involvement with normal intelligence or a relatively small degree of physical involvement with serious defects of intelligence.

The education of the child with cerebral palsy should be carried out by teachers with preparation in special education, in facilities adapted to the needs of the palsied child, and with technicians able to administer certain skills. Care should be highly individualized, because no two cases are exactly alike. It is necessary for the special education teacher to plan a program that takes into account the child's abilities and disabilities.<sup>2</sup>

<sup>1</sup> William C. Lennox. *Science and Seizures: New Light on Epilepsy and Migraine* (rev. ed.). New York: Harper & Row, Publishers, Inc., 1946.

<sup>2</sup> *Exploring the Brain of Man*. New York: National Committee for Research in Neurological Disorders, n.d.

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## VISION DEFECTS

In most cases of visual defects, the ophthalmologist can improve visual acuity by artificial lenses, medication, and surgery. There are, however, vision defects that may result in blindness if they are not detected early. Unfortunately, we find very little information concerning these defects in public school textbooks and in materials for the lay public.

### GLAUCOMA

Intense intraocular pressure of the eyeball, cupping of the optic disc, and probable blindness are associated with glaucoma. One of every 50 Americans of more than 40 years of age has some form of glaucoma. Glaucoma accounts for at least 15 percent of the cases of blindness.

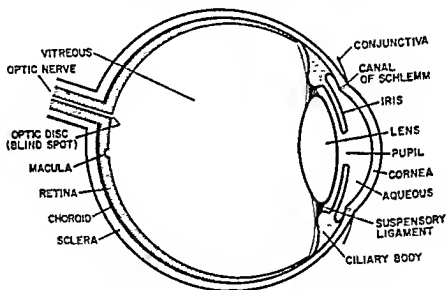


Figure 9. Cross Section of the Eye

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Within the aqueous chamber of the eyeball is a waterylike fluid, the aqueous humor. Most of the fluid drains through the Canal of Schlemm, which is located at the junction of the sclera and cornea. The absorption and escape of this fluid must be at the same rate in order that the pressure within the eyeball remain constant. If the pressure does not remain constant, the optic disc will show a "cupping" caused by pressure from the front of the eyeball. As the optic disc is the entrance of optic nerves into the retina, any damage to the optic disc affects the retina. There are several reasons why the pressure does not remain constant: (1) the iris may

be pushed too close to the cornea; (2) the Canal of Schlemm may be obstructed; (3) an infection, tumor, or cataract may hinder the escape of the aqueous humor; and (4) the structure of the eyeball may not permit the escape of the aqueous humor.

There are four classifications of glaucoma: primary, secondary, congenital, and absolute. *Primary* glaucoma involves the inability of the eyeball to maintain the absorption and escape of the aqueous humor. There are two types of primary glaucoma: *closed-angle* and *open-angle*. The closed-angle primary glaucoma is exemplified by the fact that the iris is pushed too close to the cornea. With *acute* closed-angle primary glaucoma, there is intense pain. The victim may see a greenish, hazy cast or halo. The eyeball becomes red, and vision is lost temporarily. The patient may suffer from nausea and vomiting. With *chronic* closed-angle primary glaucoma, there is blurred vision but no intense pain. Often the person has glaucoma and does not know it. Loss of side vision is gradual. Open-angle primary glaucoma is exemplified by an obstruction within the Canal of Schlemm. There is a theory that the patient was born with this structural defect in the eyeball. Seldom is there any pain with this type of primary glaucoma.

*Secondary* glaucoma is related to infection, injury, tumor, or cataract. Infection may occur to the iris, ciliary body, or chorioid. Injury to the eyeball may cause malfunctioning of the Canal of Schlemm. A tumor within the anterior portion of the eyeball may obstruct the passage of aqueous humor. A cataract may change the structure of the lens to such a degree that the flow of aqueous humor may be blocked.

*Congenital* glaucoma refers to a structural defect of the eyeball at birth. Because of this defect the absorption and escape of the aqueous humor do not occur at the same rate; therefore the pressure in the eyeball does not remain constant. Even though the infant's eyeball is elastic, pressure can increase; it can affect the optic disc and retina and cause blindness. *Absolute* glaucoma refers to destruction of the optic nerve and retina that results in complete blindness.

Frequent changes of glasses and unexplained aching about the eyes should be regarded as warning signals. Other signs may be foggy vision, "rainbow" lights, and swollen eyelids. Any sign of visual difficulty should be called to the attention of the family physician and ophthalmologist. One means of detecting the increase of pressure within the eyeball is the tonometer. In some communities, public health personnel and physicians have established clinics to assist in the detection of glaucoma.

Early detection of glaucoma can prevent blindness. A person with glaucoma should realize the need for continuous medical supervision. The ophthalmologist tries to prevent further damage to the optic disc and retina by some form of medication or by surgery.



It is imperative that through direct health instruction the student be made to realize that blindness from glaucoma can be prevented. However, the glaucoma must be detected early, because sight destroyed by glaucoma cannot be restored. Glaucoma has no relation to cancer or to high blood pressure. Glaucoma is not contagious and it is not caused by too much reading. An excessive amount of fluids and/or of smoking can cause additional harm to those who have glaucoma. It is possible that the damage to the optic disc and retina can be prevented if the patient follows the ophthalmologist's routine for daily living, medication, and medical supervision.<sup>3</sup>

## CATARACT

The lens, found behind the iris, is transparent or clear. In the cataract, the lens becomes opaque or foggy. Cataracts are present among 34 percent of people between the ages of 40 and 50 and among 90 percent of those more than 70 years of age. Sometimes cataracts among elementary and secondary school pupils are reported. In these cases, the affected eye may lose vision rapidly.

There are three classifications of cataracts: incipient, immature, and mature. An incipient cataract occurs when the cataract is first formed and the loss of vision is very slight. An immature cataract has developed when cloudiness of the lens increases and vision is impaired. There is definite loss of vision that interferes with the patient's routine activities. The mature cataract occurs when there is complete opacity of the lens. The lens is dead white.

The specific cause of cataract is still unsolved, but many types of cataracts are related to some cause. *Congenital* cataracts may be inherited or may be acquired. An example of inherited congenital cataracts is the inability of the body to utilize certain chemicals such as the carbohydrate galactose. An example of acquired congenital cataracts is a prenatal infection such as German measles. *Traumatic* cataracts are the result of a penetrating injury to the lens. The injury may cause temporary or permanent opacity, or the eye may be capable only of seeing light projected onto the cornea. *Radiation* cataracts result from atomic emanations, x-ray, and infra-red radiation, which destroy the cells of the lens. *Secondary* or complicated cataracts are caused by other diseases or defects within the eye. Iritis may bring about the development of a cataract. Glaucoma can result in cataract formation. Even though secondary cataracts are rare, the eye disease or defect can cause diminution of vision. *Metabolic* cataracts are associated with diabetes, hypothyroidism, and myotonic dystrophy; they may be caused by malfunctioning of some part of the human body. *Toxic* cataracts are caused by certain chemicals. When these toxic chemicals are used in industry, safety measures protect the workers.

<sup>3</sup> Everett Viers. *So You Have Glaucoma*. New York: Grune & Stratton, Inc., 1958.

*Senile* cataracts are the most common of all cataracts. Usually one eye is affected and the loss of vision may be slow. The improvement of vision will depend on the location and type of opacity. The most common sign is the gradual loss of vision. Another sign is the frequent change of glasses. If the ophthalmologist detects a marked increase in myopia, he will suspect an increase in the density of the patient's lenses and the formation of cataracts. Some cataract patients note a change of color values. Normally, the lens has a slight yellowish tint. With the development of a cataract, the lens has a deeper yellow or amber tint. Another sign of senile cataracts may be double vision seen with one eye.

As soon as the patient is handicapped by the loss of vision caused by the cataract, he receives surgery to remove the cataract. Other reasons for surgical removal of the cataract may be the increased intraocular pressure of secondary glaucoma or the possible presence of an additional pathological condition.<sup>4</sup>

### EYE INJURIES CAUSING BLINDNESS

Each year, at least 125,000 boys and girls suffer eye injuries. Many of these injuries cause permanent blindness. Some of the causes of eye injuries are chemical burns, gunshot wounds, carelessness during unsupervised play, unsafe play equipment, bows and arrows, and BB guns. Any injury to the cornea, iris, lens, or retina will result in serious impairment or loss of vision.

### HEARING DEFECTS

More than 12 million people in the United States have defective hearing. Of young persons aged 12 to 16, at least 7 percent have hearing problems. Seventy percent of all deafness could be prevented if detected early.

There are two common types of deafness: conduction and perception deafness. *Conduction* deafness is caused by an obstruction of sound vibrations. The obstruction may be brought about by dirt and wax in the outer canal, adhesions, scar tissue, perforations of the eardrum, an abscess in the middle ear, or congestion of the Eustachian tube. Infected tonsils, complications following measles or pneumonia, chronic sinusitis, or repeated sore throats may bring about the conditions leading to the obstruction of sound vibrations. Many cases of conduction deafness are attributable to the victim's early disregard of noises in the head, dull pain in the ear, and diminished hearing, as well as his neglect of ear infections. *Perception* deafness is caused by some injury or disease in the inner part of the ear, resulting in destruction of segments of, or all of, the auditory nerve. Toxins produced by focal infections such as pyorrhea, or resulting

<sup>4</sup> Roy Scholz. "Cataract—The Fog That Blinds." *Today's Health*, 39:56-58, 81-83 (January 1961).

from diseases such as influenza can damage the nerve endings of the inner ear. Certain drugs and high body temperature also can produce perception deafness. Hearing difficulties occur more frequently in adults than in children, but any sign of hearing difficulties in children of school age should be called to the attention of the family physician. If preventive measures had been taken early in life, perception deafness would not be as serious as it is in most patients who receive medical care.

## SEVERE POSTURE CONDITIONS

Structural scoliosis is a severe lateral spinal deviation. It may be caused by rickets, osteomalacia, or polio. The resulting effects may include C-shaped left-total curve, S-shaped combined curve, and right lumbar curvature. In the C-shaped left-total curve, the left shoulder is high, or the left shoulder is high with the left hip prominent. The S-shaped combined curve may include the left shoulder high with the right hip prominent, or the right shoulder high with the left hip prominent. In right lumbar curvature, the right hip is prominent. Functional scoliosis is caused by poor walking, standing, and sitting posture.

Occasionally, anterior-posterior curvatures of the spine can be severe. In kyphosis, there may be an extreme curvature in the thoracic region of the spine. In lordosis, there may be an extreme curvature in the lumbar region of the spine. These anterior-posterior curvatures may be the result of a slumped walking posture, shoulder blades that are pushed forward, a protruding abdomen, or sinking at the hips.

In all severe posture conditions, the family physician and an orthopedic specialist are indispensable. Because posture conditions can affect the physiological functions as well as the mental health of the patient, they need expert medical care.

## MUSCULAR DYSTROPHY

There are at least 200,000 victims of muscular dystrophy in the United States. Two thirds of these victims are children. This nonremediable health condition is a progressive loss of the striated musculature or deterioration of the voluntary muscles. The cause and treatment are unknown, at the present time.

There are five main types of muscular dystrophy: pseudohypertrophic, Erb's limb girdle, facioscapulohumeral progressive dystrophic ophthalmoplegia, and dystrophia myotonica. It is generally agreed that there is a hereditary basis for all types. All types affect the muscles of the shoulder and hip joints.

Pseudohypertrophic muscular dystrophy is the most severe form. It begins in earliest childhood. The child falls easily and has trouble getting

up. He has enormous calf muscles, waddling gait, and weakness and instability of lateral fixation of the hips. The Gowers test is used to discover how the child rises from a lying position on the floor. In the last phase of rising, when he should bring his body erect by straightening the knee and hip joints, he has to push on his knees and thighs with his hands. Pseudo-hypertrophic muscular dystrophy is a sex-linked inherited characteristic affecting male children. Over a period of years, the wasting of the muscles progresses. Inevitably, the thigh, shoulder, and trunk muscles are involved. By the age of 15 years the child is greatly disabled. Some patients survive to reach the third decade of life.

Erb's limb-girdle type of muscular dystrophy begins most commonly in the second decade of life. In the remaining cases, the onset is scattered throughout all age groups up to the sixth decade. Difficulty in raising the arms above the shoulders is usually the first sign. After a year or two, weakness is seen in the flexion of the elbows. Difficulty in climbing stairs is noticed as an early sign in about one third of the patients. Weakness and wasting away are seen in the trapezius, pectoralis major, biceps, brachioradialis, gluteus maximus, adductors, deltoid, and quadriceps over a period of time. The muscular wasting progresses slowly year by year. Eventually lordosis, protuberance of the abdomen, and weakness of the neck muscles are evident.

The facioscapulohumeral type appears in the early weakness of facial muscles. Patients with this type say that they have never been able to close their eyelids completely, even in sleep. Also, they cannot whistle or blow with the lips. Thick, gaping lips are characteristic. Difficulty in raising the arms above the shoulders appears between 15 and 20 years of age. Weakness and wasting of the trapezius and pectoralis major occur first. Later the biceps and triceps are involved. It is possible that facioscapulohumeral dystrophy can become arrested. The amount of disability, however, depends on the extent of the weakness and of the wasting of the muscles during the active phase.

Progressive dystrophic ophthalmoplegia (ocular myopathy) is the mildest of the muscular dystrophies. The first sign is a progressively bilateral drooping of both upper eyelids beginning in middle life. Later there is increasing limitation of all eye movements. The iris, however, seems to be unaffected. Weakness in the closing of the eyelids appears. Among the later signs there is weakness in facial and neck muscles.

Dystrophia myotonica is characterized by outstanding signs, such as muscle spasm and early involvement of the hands, upper eyelids, and neck. Other signs are associated endocrine disorder and cataract. Earliest sign is the weakness of the grip of the hands, with difficulty in relaxing a strong grasping effort. Wasting and weakness of muscles occur in the small muscles of the hands and forearms, masseters, sternocleidomastoids, and shoulder and neck muscles. These signs may appear at any age, but usually

the onset is between the twentieth and thirtieth years. Dystrophia myotonica steadily becomes worse.

Diagnostic difficulties arise with the various types of muscular dystrophy. In addition, muscular dystrophy can resemble the effects on the muscular system of other nonremediable health conditions or of certain diseases. There is no known specific treatment for muscular dystrophy at the present time.<sup>5</sup>

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## FOLLOWING APPRAISAL OF THE PUPIL'S HEALTH STATUS, WHAT CAN SCHOOL PERSONNEL DO?

When the appraisal of the pupil's health status is completed and the results indicate certain problems in pupil health, what can be done? The Joint Committee on Health Education Terminology suggests (1) inform pupils, teachers, parents, and others; (2) help school-age children get treatment or educational programs in accordance with their abilities.<sup>1</sup>

School personnel can be informed of their actions following appraisal only if continuous in-service health education is made imperative. The in-service health education should stress (1) the ease by which these suggested procedures can be followed without infringement on the teacher's daily tasks, (2) the limitations of these procedures, and (3) the relation of the procedures to the total school health program.

### PROCEDURES COMMON TO ALL HEALTH PROBLEMS

The teacher should be familiar with the procedure in her own school system for referral medical examinations (Chapter 2). School systems vary with regard to how the signs of certain health problems observed by a teacher are summarized and reported to the family or the school physicians. The signs observed by the teacher may assist the physician in determining the extent and nature of the health problem.

At the same time, parents should be informed of the results of the appraisal. Here, too, school systems do not agree entirely on how the results of the appraisal reach the parents. In some communities, a letter, sum-

<sup>1</sup> Joint Committee on Health Education Terminology. "Health Education Terminology." *Journal of Health, Physical Education, and Recreation*, 33:27 (November 1962).

marizing the results of the appraisal, is sent to the parents. In other communities, a parent-teacher conference is held, at which time the teacher informs the parents of the results of the appraisal. Often the public health nurse or school nurse approaches the parents directly, as will be presented under "follow-through."

At this point in the procedures school personnel should encourage parents to seek medical or dental care for their son or daughter's health problems. Parents should understand and accept that this is their primary responsibility, and *not* the responsibility of the school personnel. It may be necessary for the public health nurse or school nurse to inform parents of this fact.

When the student reaches the secondary school he can assist his parents by seeking and acquiring medical or dental care for himself. He should be encouraged to assume some of the responsibilities for his health that formerly were those of his parents. He should no longer be entirely dependent on them for acquiring medical or dental care.

The results of health appraisal can be told to the student or parent by a teacher-pupil, nurse-pupil, teacher-parent, or nurse-parent conference. Whether the student or the parent is involved, the aims of health counseling should be considered.

## HEALTH COUNSELING

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association has listed six aims of health counseling. First, the pupil must be informed of his health status after a careful appraisal of his mental and physical health has been made. Second, the pupil's health problems must be interpreted to the parents, who must be encouraged to seek correction of the problems. Third, the pupil must be motivated to desire assistance in the correction of his health problem. Fourth, depending on his maturity, the pupil should be encouraged to assume responsibility for his own health. Fifth, information on pupils' health problems must be given to both parents and pupils in individual conferences. Sixth, pupil's health needs and interests must be understood.<sup>2</sup>

A teacher, nurse, or health educator might be assigned to act as the person to compile all information concerning a particular pupil. The parent will receive this information concerning his child's health problems during one visit to the school. During the compilation of information, all pupils having severe health problems (who need immediate medical or dental care, who require assistance from community agencies, or who are

<sup>2</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *School Health Services*. Washington, D.C.: National Education Association, 1953, p. 159.

assigned to services of the school counselor) should be separated from those having health problems not necessitating these procedures.

Usually, when health problems are less severe, teacher-parent and teacher-pupil conferences will be sufficient. Teachers must be aware that during these conferences their tasks are to inform, interpret, explain, encourage, and motivate parents and pupils to seek correction of the health difficulty. Before teacher-parent conferences, the health coordinator or nurse must provide in-service education to acquaint teachers with what types of information are to be given to parents, how this information is to be interpreted to both parents and pupils, and how health counseling is to proceed.

Schwebel and Harris<sup>2</sup> have given several suggestions to promote satisfactory health counseling. Persons attempting health counseling should respect and like people and should be tactful when handling pupils' health problems. They should create a permissive atmosphere so that the pupil and parent will express themselves freely. Teachers must recognize that pupils and parents may have difficulty in making known their feelings; some of this difficulty will be overcome if the pupils and parents are made to realize that the teacher wants to help them. Teachers should also be aware of the pupils' and parents' reactions to the teacher's personality. Pupils and parents must realize that they, not the teacher, must solve health problems—through their own decisions. Although teachers must accept the counseling services of family physicians for certain health problems, they can do much to overcome the ignorance and superstition that contribute to health problems by making the pupil and his parents understand why there is need for medical and dental care.

Limitations to health counseling are also suggested by Schwebel and Harris. Because many of the pupils and parents have inhibitions about stating their problems, the school personnel may misinterpret the problems. As a result, some of the health information given to them by the school personnel may have disturbing effects. The teacher therefore must be fully informed concerning the pupil's mental and physical health. The elementary teacher and school health educator can answer many questions by direct health instruction.



personnel. The school counselor will probably supplement the summary with case studies. To have health counseling effectively completed, school administrators must allow teachers to have time during the school day to schedule conferences, gather data needed in health counseling, record the results of the conference, and confer with other school personnel concerning the pupil.

After the secondary school student or the parent has received health counseling, the public health or school nurse is consulted; she completes the follow-through or checks that medical or dental care has been received.

### FOLLOW-THROUGH BY THE NURSE

One of the most important functions of the nurse in school health services is the follow-through. The nurse will come into contact with teachers, parents, pupils, community physicians and dentists, personnel of community agencies, school and administrative personnel, and the health coordinator and school health educator.

Some pupils take priority in the follow-through. These are the pupils who have several health problems, as indicated from medical and dental examinations, screening procedures, and teacher observations. Such pupils may have been excluded from school because of communicable disease and may have received emergency care for sudden illness or injury. Also, pupils not receiving immunization procedures might be included in this priority list, as well as new students not having readiness for school medical and dental examinations.

The nurse may place each pupil's name on a 3 x 5 card, together with the dates for nurse-pupil and nurse-parent conferences. The pupil's card is filed according to the dates of the next planned conference. At school, the nurse confers with the pupil to determine whether a home visit can be made; then she makes an appointment. Secondary school students, however, usually prefer to be advised directly about their health needs. They can accept the responsibility of seeking medical and dental care without involving their parents. In buildings having a school nurse, the follow-through takes the form of a series of nurse-student conferences within the school rather than at the home. These individual student-nurse conferences are numerous and are useful in encouraging the adolescent to take the initiative in solving his own health problems.

Before the home visit, the nurse reviews the pupil's cumulative health record and anecdotal records, meets with the teacher and principal to obtain further information concerning the pupil, checks to see whether there are other home visits in the pupil's neighborhood, and telephones for appointments. Letters, telephone calls, notes, and visits by parents to the school can be used in the follow-through, but the home visit is usually the best procedure.

Various methods assist nurses to organize home visits. Referral forms in

duplicate copies, with space for notes, are important, or small notebooks may be utilized to hold the notes. Sometimes the cumulative health records are taken on the home visits.

The nurse completing the follow-through will do health counseling. She will inform, interpret, explain, encourage, and motivate parents to seek assistance for their child's health problem. Parents react in various ways to these home visits: some will immediately seek medical or dental care; others will be indifferent and will have no apparent interest in their child's health problems. Some, because of ignorance or religion, may even refuse to take action. When advising the parent to seek medical or dental care, the nurse should suggest the family physician or dentist. When a medical or dental specialist is needed, the family physician or dentist makes the recommendation. Some families have neither a family physician nor a dentist. The nurse might then suggest a panel of physicians or dentists such as those prepared by the local medical or dental societies.

Because of the parents' low economic status, it may be necessary for the nurse to contact a community health or welfare agency. The school principal should then be informed of the necessity for community assistance.

The first home visit by the school nurse is usually followed by several others. The nurse will have to decide the degree of urgency of each pupil's problem, as well as the need for subsequent visits. When the pupil has an irremediable health problem, the nurse may have to explain the nature of the problem to the parents, assist them in accepting their child's difficulty, suggest ways of altering family living so that the child can adjust better, and help the child in these adjustments. When parents are not well informed about communicable diseases and their transmission to other family members, the nurse may have to acquaint parents with the signs of communicable diseases, the means of preventing their spread, the necessity for medical care of family members with communicable diseases, and parental care during their child's illness.

Encouraging parents to seek medical and dental attention is one of the nurse's difficult tasks. Parents may not accept the importance of medical or dental services if they have been unduly influenced by the advertising of nostrums, charlatans, and quick cures. The fear of medical or dental treatment and its cost are constantly confronting most parents.

After the home visit, the nurse may wish to record her observations of the pupil, her recommendations for further medical care, and demonstrations she gave to the parents of the care of the ill or injured child. The nurse's observations and recommendations might be placed on a referral form or a written report to be sent to the physician handling the case. When parents have no family physician and their child needs medical care, the nurse may refer the parents to a panel of cooperating physicians or a clinic, together with her observations and recommendations.

The follow-through has many possibilities for use in the total school health program, depending on the working relations existing between the nurse and the instructional staff. Following the home visit, the nurse should plan to have a nurse-teacher conference. The nurse can supply the teacher with information for promoting the pupil's health during the school day. However, the utilization of this information by the teacher depends on the teacher's understanding of the total school health program, the in-service health education given by the health coordinator, and the rapport between the nurse and the teacher. The teacher can supply the nurse with data about the pupil's health status and practices, achievement, social tendencies, and possible capacities for schoolwork. To the school health educator and health coordinator, the follow-through can supply data for health teaching, the school health council, in-service health education, and the evaluation of school health services.

Because agencies differ in their functions, the nurse should be familiar with each community agency and its means of assisting families with particular health problems. When the nurse wishes to refer a family to an agency, the family's permission and help must be secured so that the nurse can supply the agency with background information. The nurse should encourage the parents to request assistance from appropriate community agencies rather than to rely on her to obtain the assistance. Occasionally, several community agencies may be aiding one family. The nurse might suggest that representatives of these agencies meet together to discuss present methods of family assistance, to eliminate unnecessary agency efforts, and to foresee possible future problems.

The public relations program of a school should be well understood by the nurse, because she must make effective contacts with parents, physicians, dentists, local health departments, hospitals, and community official and nonofficial health agencies. The school administrator should acquaint the nurse with the school system's public relations program, policies, and procedures. The administrator may be unaware of the many community contacts the nurse makes during the school day. A misinterpretation by the nurse of the school's philosophy, curriculum development, administrative and supervisory practices, and the total school health program can damage the efforts of the school's public relations program.

The school nurse should clearly understand her role in follow-through, school health services, and total school health program. There has been a considerable body of literature written by nurses on the importance of school nursing, but there has been little opportunity for parents, school administrative officials and instructional personnel, and health coordinators to evaluate the effectiveness of school nursing.

In addition to the follow-through by the nurse, teachers should be alert for signs of possible health difficulties (Chapter 2). There is a chance that

other signs of the same health problem, previously observed, may occur. Or signs of a different health problem may be observed. Also, a health problem that has received medical or dental care can recur. Thus the teacher should be continuously alert for signs of possible health difficulties.

In assisting the pupil with a health problem, teachers should be aware that environmental factors, teacher's health, adjustments within the school day, and health instruction must be taken into consideration. Thus two of the four parts of the total health program can be related to school health services: healthful school living and health instruction. As the following pupil health problems are presented, environmental factors, teacher's health, adjustment within the school day, and direct health instruction will be emphasized.

### **VISUAL DIFFICULTIES AND ADDITIONAL WAYS TO ASSIST THE PUPIL**

Light and color in the classroom, arrangement of seating and promotion of eye health by environmental factors can assist the pupil. Some of the ways to promote eye health by environmental factors:<sup>4</sup>

1. Check that no student works in his shadow.
2. Never seat a student with the sunlight in his direct line of vision.
3. Keep the upper portion of windows unshaded except when the sun shines on these window surfaces.
4. Use multiple seating arrangements.
5. Check condition of interior daylight controls.
6. Use soft chalk when writing on blackboards.
7. Be aware of veiling glare on black slateboard surfaces.
8. Report and have replaced all defective incandescent and fluorescent tubes.
9. Check height of desk-chair combinations so that the student receives the optimum light on the working surfaces.
10. Provide library areas of classroom with ample brightness levels.

In addition, the teacher can use printed materials in clear type and in black ink, on dull-finished white paper with adequate spacing between words and lines and with generous margins. The teacher should be aware of the size of type on printed pages and choose the size of type to suit the pupil's needs. Eye injuries should be prevented by promoting safety skills in different teaching environments and activities. Emergency care procedures (Chapter 7) for eye injuries should be known to all school personnel.

The teacher's eye health should be of vital concern to her, particularly

<sup>4</sup> Glare, brightness, and multiple seating arrangements will be discussed in Chapter 8.

the date of her ophthalmologist's examination. Pupils soon become aware of the teacher who does or does not promote her eye health. The teacher's actions in reading, writing on the blackboard, playing a game, or giving a demonstration can reveal visual difficulties observable to pupils.

Daily activities can be modified so that the student with visual difficulties can remain a member of the class and have a sense of belonging. Targets used in accuracy tests can be made bigger. Printing or writing on the blackboard by the teacher can be larger and more legible. The pupil should be aware that he can change locations so that he can see better. Discussion periods should alternate with reading sessions. Small objects on the floor should be removed so that the pupil does not stumble over them. These are some of the ways in which the daily activities can be modified.

Elementary teachers and school health educators can include, among the units of direct health instruction, care of the eyes and prevention of diseases and injuries to the eyes. An outline of the subject matter of these topics is found in Chapter 15. When we have 30 of every 100 pupils in elementary and secondary schools with poor vision, we certainly need to stress the care of the eyes, prevention of eye injuries and diseases, and understanding of early detection of eye defects.

## HEARING DIFFICULTIES AND ADDITIONAL WAYS TO ASSIST THE PUPIL

The teacher should be acquainted with the ways to control unnecessary classroom noise as well as the use of acoustical treatment in the classroom. Seating arrangements can often assist the pupil with a hearing difficulty. If the pupil is placed in a position so that his ear with better hearing acuity is toward the teacher, he has a better chance to hear the teacher's statements.

Possible loss of the teacher's hearing is not unusual. When the teacher asks pupils to repeat what they said or repeatedly answers pupils' questions incorrectly, the pupils become aware of the teacher's loss of hearing. As the hearing loss progresses, the teacher may speak louder or fail to locate the source of sound. Teachers should be aware that their failure to recognize loss of their hearing does *not* assist the pupil with a hearing difficulty.

Teachers can assist the pupil with a hearing difficulty throughout the school day by:

1. Being certain the pupil can see the teacher's lips when speaking
2. Standing in positions so that sunlight does not shine into the pupils' eyes and diminish the pupil's chances to watch the teacher's lips
3. Keeping hands and pencils away from the face when speaking

4. Standing still when speaking
5. Repeating key words and assignments
6. Speaking clearly without exaggerations
7. Avoiding gestures
8. Using a key vocabulary on the chalkboard when new subject matter is presented
9. Encouraging the pupil to read ahead of his classmates
10. Assigning a "big brother" to him
11. Being certain that the pupil is looking at the teacher when the teacher speaks to the pupil

Elementary teachers and school health educators can include, in direct health instruction, the care of the ears and the prevention of diseases and injuries to the ears. Such topics as infections of the middle ear, hearing aids, screening of hearing, and other health problems related to loss of hearing can be included within units of direct health instruction specifically concerned with the ears.

### EMOTIONAL HEALTH PROBLEMS AND ADDITIONAL WAYS TO ASSIST THE PUPIL

Of all the health problems, the emotional health problems are probably the least understood and accepted. No parent or pupil delights in being told of emotional health problems. Thus the teacher should be aware of the counseling services offered by the school system *before* she informs the parent or pupil of the observed signs of emotional health problems. The counseling services can confirm the observed signs of emotional health problems and work with the teachers during assistance to the pupil. Most school systems will have established procedures for counselor-pupil conferences and psychological testing by counselors, as well as for exchange of pupil information among counselors, physicians, and teachers. Approved community child guidance clinics might be used, depending on the school system's referral system.

Teachers have obligations to evaluate their emotional health and its effect on pupils. Most teachers are aware that their emotional stability influences the pupil's mental health. A teacher with a clear understanding of her capacities can have a stabilizing effect on pupils. If the teacher shows evidence of self-confidence, pupils develop a sense of security. The teacher free from personal problems and pressures feels more secure. The teacher's sense of humor, courtesy, tact, kindness, patience, understanding, and honesty reveal some of the characteristics of emotional stability. Other characteristics include: <sup>a</sup>

<sup>a</sup> From a leaflet published by the National Association for Mental Health, 10 Columbus Circle, New York, 1951.

1. Not permitting her own emotions such as fears, guilt, worries, anger, love, or jealousy to take precedence over teaching
2. Accepting her shortcomings
3. Taking life's disappointments in their stride
4. Having a tolerant attitude toward herself as well as others
5. Having self-respect
6. Accepting situations that arise and dealing with the situations
7. Gaining satisfaction from simple, everyday pleasures
8. Considering the interests of others
9. Having personal relations that are satisfying and lasting
10. Feeling that she is a part of a group
11. Accepting her responsibilities
12. Planning ahead and not fearing the future
13. Welcoming new experiences and ideas
14. Setting realistic goals for herself
15. Thinking for herself and making her own decisions
16. Striving to do the best job that she is capable of doing and gaining satisfaction from it
17. Having a sense of responsibility to her neighbors and fellow men

In direct health instruction there are many units within the area of mental health. Some of these units are getting along with others, learning to understand oneself and others, gaining self-confidence, being honest, and accepting tolerance. Thus the teacher not only promotes mental health during her relations with pupils but also includes mental health topics in direct instruction.

### **NUTRITIONAL DEFICIENCIES AND ADDITIONAL WAYS TO ASSIST THE PUPIL**

Studies<sup>6</sup> have indicated that the meal most often missed in the day is breakfast. These studies involved boys and girls, grades 1 through 12. Boys and girls who skip breakfast probably do not realize the harm they are doing to themselves.

1. They are denying themselves from one fourth to one third of the day's total food requirements.
2. They cannot turn out as much work in the late morning hours as can boys and girls who eat a good breakfast.
3. They have slower mental reactions.
4. They tire easily.
5. They are not obtaining their share of nutrients as listed in the Recommended Dietary Allowances, Food and Nutrition Board, National Research Council

<sup>6</sup> *Breakfast Source Book*. Chicago, Ill.: Cereal Institute, Inc., 1961.

The supervision, food preparation and serving, and sanitary measures of the school lunch will be presented in Chapter 9. During lunch activities, school personnel should encourage students to fulfill their responsibilities. Among the many responsibilities, eight are given.

1. Students should develop sound dietary habits and table etiquette.
2. They should maintain a quiet and clean lunchroom or cafeteria.
3. They should keep plate scrapings to a minimum.
4. They should not make continuous purchases of candy and sweetened soft drinks during the noonday meal.
5. They should actively participate in school lunch committees.
6. They should hold campaigns to reduce food waste in lunchrooms and cafeteria.
7. They should try new foods on school menus and have an eagerness to eat their lunch in the cafeteria or lunchroom.
8. They should observe the rules of desirable social behavior.

Continuous daily practice of two health habits accompany the supplementary feeding and the noonday school meal. One of these habits is hand washing before entering and after leaving the cafeteria or lunchroom. Most elementary schools provide hand washing facilities at the entrance to the lunchroom, but hand washing facilities, found at the entrance of restaurants and public cafeterias, may not be available in every secondary school. The other health habit is tooth brushing. The toothbrush can be carried to the lunchroom or cafeteria, and when the pupil leaves, he can wash his hands, brush his teeth, and carry the toothbrush back to his classroom. In elementary schools having self-contained classrooms with boys' and girls' toilet rooms, children can use these toilet rooms for hand washing and tooth brushing. These toilet rooms are provided with sinks and have shelves on which toothbrushes can be placed or from which the brushes can be hung. Health instruction becomes meaningful when hand washing and tooth brushing accompany snacks and noonday meals.

Many units, from the area of nutrition, can be used in direct health instruction. Some of these units are the Essential Four Food Groups, carbohydrates, proteins, vitamins, mineral elements, interrelation of weight and health, influences on our dietary habits, food fads and fallacies, misuse of stimulants, milk, meat, bread, and food allergies. These and other units from the area of nutrition are found in Chapter 15.

### **POSTURE CONDITIONS AND ADDITIONAL WAYS TO ASSIST THE PUPIL**

Teachers should be aware of the relation of light and seating to posture and body mechanics. Desk-chair combinations can be adjusted to the pupil's body build. Students can become familiar with the adjustments for desk-



chair combinations. Different varieties of classroom furniture can be used. Classroom activities can be alternated to eliminate long periods of sitting. Desk tops with glossy finishes should be avoided. In schools where students change rooms and seats throughout the day or in classrooms where traditional furniture is used, students should be aware of the different sizes of seats and the different heights of desks in each room. In classrooms having tablet-arm chairs, a few left-handed tablet-arm chairs should be provided. Additional information concerning school furniture will be presented in Chapter 8.

Students are influenced by the teacher's posture of standing, walking, and sitting. If she has reasonably acceptable posture, students follow her example. In fact, the control of the class may be dependent on her posture. If the teacher in standing is observed to slump, carry one shoulder higher than the other, incline the head forward, stand with the weight on one foot, or has the toes pointed outward, students are quick to notice.

Depending on the pupils' health needs and the age level, many lessons can be included in a posture unit. Some of the lessons are walking posture, sitting posture, standing posture, deviations of bone growth because of poor posture, kyphosis, lordosis, structural and functional scoliosis, and the relation of seating and light to posture.

### **COMMUNICABLE DISEASES AND ADDITIONAL WAYS TO ASSIST THE PUPIL**

The teacher should be acquainted with procedures pertaining to isolation and the exclusion of pupils with communicable diseases. These procedures will be discussed in Chapter 6. At the same time, the teacher should be familiar with pupil readmission procedures following the pupil's recovery from communicable diseases (Chapter 6).

Sanitation of the school's facilities is a prime factor in controlling diseases. Disinfectants used in cleaning destroy pathogenic bacteria. These disinfectants might include lysol or hydrogen peroxide. Urinals, toilets, washbasins, floors of toilet rooms, shower and locker rooms, lunchrooms, and health service units need disinfectants. The water supply should be purified so that water-borne diseases such as typhoid fever, enteritis, and amebic dysentery are not reported among pupils and school personnel. Sewage, waste, and garbage should be properly disposed. When there is inadequate sewage treatment, the following sewage-borne diseases may occur: typhoid fever, dysentery, and paratyphoid fever. When there is inadequate disposal of waste and garbage, breeding places for insects, rodents such as the common house mouse, and stray animals, multiply. Sanitary procedures are needed in classrooms, corridors, and teaching laboratories as well as at all drinking fountains.

A teacher should have the privilege of sick leave so that she will not spread her communicable disease to pupils and other school personnel. Sick leave provides the teacher with a stated length of time when she may be absent from her job because of a communicable disease, with partial or no loss in salary. Usually, on return to the school, the teacher is asked to submit a physician's certificate indicating she has fully recovered.

There are many units within the area, prevention of diseases, that can be presented in direct health instruction. Some of these units are colds, streptococcal infections, tuberculosis, rheumatic fever, rubella-rubeola, mumps and scarlet fever, poliomyelitis, chicken pox and whooping cough, tetanus, influenza and pneumonia, infectious mononucleosis, and typhoid fever. In the secondary school, a unit on the venereal diseases must be included because of the incidence of venereal diseases among young persons. Among the units should be included the causative agents of communicable diseases and their transmission, and the immunization procedures protecting the individual. In addition, units dealing with skin infections and infections of the ears should be considered. Skin infections, such as ringworm, impetigo, and boils, should not be omitted from units on the prevention and control of diseases. Infections of the eyes, such as conjunctivitis, styes, and iritis, should not be overlooked.

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## PREVENTION AND CONTROL OF DISEASES

Communicable or infectious diseases have specific causative agents, which are minute microorganisms. These agents identify a disease, thus enabling the physician to destroy the causative agent and to treat the person who is ill with the disease. These causative agents are classified as bacteria, viruses, protozoa, metazoa, fungi, and rickettsiae.

### CAUSATIVE AGENTS OF DISEASES

Bacteria are one-celled organisms and can be pathogenic or disease producing. Bacteria may be of three shapes. Rod-shaped bacteria are called bacilli. Round- or spherical-shaped bacteria are cocci. Diseases such as "strep" throat, pneumonia, gonorrhea, and boils related to staphylococci are caused by cocci. The coiled variety of bacteria are spirilla. Diseases such as cholera are caused by the spirilla. Some bacteria produce spore forms. A spore is a resting stage of the organism caused by nuclear changes in the cell. It is possible for the spore to live almost indefinitely under a very unfavorable environment. When the conditions are right for its growth, the spore can develop into a full-sized organism. This is of tremendous importance in such diseases as tetanus.

Viruses are so small that they range from 10 to 350 millimicrons in length, or about  $1/25,000,000$  of an inch. More than 150 human viruses have been isolated and classified into six major families, plus a tentative seventh family, the common cold virus. Viruses come in many shapes: rods, filaments, spheres, hexagons, and "tails." A virus is a core of nucleic acid wrapped in protein. The protein overcoat tries to find a site on a cell wall to which the virus can attach itself. In other instances, the cell wall may be an area of broken skin. Viruses float in the blood and body fluids, but the viruses must penetrate body cells in order to cause the symptoms of a disease. When the virus nucleic acids penetrate the cell, changes occur in the cell, bringing about virus infections. Some of the

diseases caused by viruses are colds, German measles, poliomyelitis, rabies, smallpox, mumps, and influenza.<sup>1</sup>

Protozoa are one-celled animal organisms, lowest of animal life. Protozoa vary in size. Some are as small as the most minute bacteria, whereas others exceed the largest bacteria by many times. Only a few protozoa cause infectious diseases. Three common diseases occurring to man and caused by protozoa are malaria, sleeping sickness, and amebic dysentery.

Metazoa include many-celled animals of higher organization, such as flukes, hookworms, trichinae, tapeworms, lice, and itch mites. The *flukes* include liver, lung, gastrointestinal, and blood flukes, which are trematode worms.

Adult *hookworms* are  $\frac{1}{4}$  to  $\frac{1}{2}$  inch in length and live in the small intestines. The hookworm pierces the human skin usually between the toes and finds its way to the lymphatics, circulatory system, respiratory tract, and small intestines. Hookworm is an international disease prevalent where there is inadequate sewage treatment.

*Trichinae*, causing trichinosis, are found in the meat of infected swine. These small round worms are acquired when man eats infested pork not cooked sufficiently to kill the trichinae. Medical diagnosis of trichinosis is difficult. Often the larvae of the trichinae reach the circulatory system and heart before medical diagnosis of trichinosis has been made.

*Tapeworms* are acquired by man when he eats raw or partially cooked pork, beef, or fish. The adult tapeworm lives in the intestines and lays its eggs there; they pass out of the body with the feces. The eggs are eaten by an intermediate host, such as a cow or hog. Larvae develop in the new host and enter the blood stream. The blood carries the larvae to the muscles where they develop into cysts. Man eats the flesh of the infested cow, hog, or fish. If the meat is insufficiently cooked, man acquires the tapeworm cysts and has the disease.

There are three common varieties of *lice* in man: *pediculus capitis*, or head lice; *pediculus corporis*, or body louse; and *phthirus*, or pubic louse. Head louse is the most common variety of lice, often found in children. The eggs or nits are firmly attached to the hair, near the scalp. Head lice are spread by personal contact, brushes, and hats. The body louse is spread by contact with infected persons, their clothing, or their personal effects. The lice leave the human when he suffers with fever or dies.

*Itch mites* burrow under the superficial layer of the skin. They lay their eggs in the burrows and produce itching. The burrows become filled with dirt and create fine lines or black trails on the inner sides of fingers and thighs, or wrists and backs of hands, at armpits, and upon the abdomen. Scabies is highly contagious and spreads by actual contact or infected clothing.

<sup>1</sup> Donald C. Cooley. "Viruses: Molecules That Cause Disease." *Today's Health*, 40, 23 (February 1962).

Pathogenic fungi, which attack man, are microscopic. Athlete's foot and ringworm of the scalp are two common fungi infections. Epidermophytosis, athlete's foot, appears as a lesion with a vesicle or vesicles on the soles of the feet, between the toes, and sometimes on the hands. The vesicle may break, discharging a watery fluid. Cracks, as well as scaling, may appear. Itching accompanies the disease. Sometimes the vesicles become infected, causing serious conditions. Investigations have revealed that fungi causing epidermophytosis are present on the feet of the average American as early as childhood and adolescence. These fungi are contacted in many places and remain on the feet over a period of time. Only when unusual conditions occur do young people develop clinical fungus disease. It may be useless to sterilize surfaces of toilet rooms, shower and locker rooms, and swimming pools, because there is little evidence that these surfaces are the breeding grounds for pathogenic fungi. Any attempt to sterilize shoes and socks of patients with fungus disease of the feet may be of little value, and immersion of the feet in a basin of antiseptic solution will not prevent the transmission of fungus disease. Exclusion of persons with epidermophytosis from camps and public facilities is useless; the relatively small number of fungi deposited may not be spreading the disease. These simple procedures may raise the resistance of the individual's skin to active epidermophytosis: (1) use perforated shoes whenever possible; (2) wear wool and cotton socks capable of absorbing moisture; (3) use mild, drying fungistatic foot powder; (4) insert lamb's wool between toes; (5) dry feet carefully and use dry footwear after shoes and socks are "soaked"; and (6) use nonalkaline soapless detergents when washing feet.<sup>2</sup>

Rickettsiae are barely visible under the microscope and range in size between bacteria and viruses. They are transmitted by lice and ticks. They are found in tissues of man, other mammals, and insects. Two diseases caused by rickettsiae are typhus fever and Rocky Mountain spotted fever.

## IMMUNIZATION AS A MEANS OF PROTECTION

Immunization raises the human body's resistance to the effects of the causative agents of diseases as these agents enter the body. When bacteria enter the human body, poisons from these bacteria, called "toxins," create unusual disturbances in the body tissues. To combat the disturbances, antibodies are formed. It is possible for a person to have antibodies for a specific infectious disease after recovery from the acute disease or through

<sup>2</sup> Rudolph L. Baer, Stanley A. Rosenthal, Hyman Rogachevsky, and Jerome Z. Litt. "Newer Studies on the Epidemiology of Fungous Infections of the Feet." *American Journal of Public Health*, 45:784 (June 1955).

an injection of an antigen stimulating the formation of antibodies for the specific disease.

Immunization affords protection against the results of infectious diseases within the human body. Each infectious disease creates damage to internal structures. The visual acuity of a child may be affected. Internal organs such as the kidneys may not perform their tasks as efficiently as before the disease struck. Thus immunization protects the person from the effects of infectious diseases.

There are two kinds of immunity: natural and acquired. *Natural* immunity may result from the inheritance of specific antibodies to a particular disease. *Acquired* immunity is of two types: active and passive. *Active* acquired immunity results when the individual manufactures specific antibodies for a particular infectious disease either by (1) having an attack of the disease or (2) having an injection of an antigen stimulating the formation of antibodies for the specific disease. The antigen may be dead or weakened microorganisms or minute amounts of their poisonous products (toxins). *Passive* acquired immunity is used when the human body is not able to manufacture specific antibodies for a particular infectious disease. Then the specific antibodies are produced elsewhere. The specific antibodies may be found in the liquid part of a person's blood or in a constituent of the blood—gamma globulin. These produced antibodies are injected into the person unable to manufacture specific antibodies for the particular disease. In other cases, the specific antibodies are produced by an animal that has received injections of the microorganisms or their toxins. The animal produces specific antibodies that are removed from its blood, concentrated, and standardized before injection into the person unable to manufacture the specific antibodies for a particular disease. Passive immunity lasts a relatively short time. It is given when a person needs immediate protection and is ill with a particular disease, or when susceptible infants are exposed to a particular disease for which there are available antibodies.

A booster dose works on the immunological principle that once bodily mechanisms producing antibodies have been stimulated by an immunizing agent, the mechanisms become sensitized and react to a second or third injection of the immunizing agent. Each time these mechanisms manufacture a vigorous output of antibodies depending on the peculiarities of the disease. The booster dose may stimulate enough antibodies so that the disease cannot do any damage in the human body. The booster dose may work well, fairly well, or not at all.

Immunization is a means of protection against the results of infectious diseases within the human body. Detection procedures indicate the person's susceptibility to a particular disease. The Schick, Dick, Wasserman, and tuberculin tests are some of the detection procedures. The Schick

Test is used to indicate whether a person is susceptible or immune to diphtheria. The Dick Test is used to discover whether the individual is susceptible or immune to scarlet fever. The Wasserman Test, together with other blood-complement fixation tests, is used to determine whether the individual's blood contains antibodies against syphilis. The results of tuberculin tests reveal whether the tubercle bacilli have entered the human body.

## SOME COMMON DISEASES

Eleven common communicable diseases will be presented; their causes, sources of infection, methods of transmission, incubation period, signs, susceptibility, and methods of control will be discussed.

### COMMON COLDS

About 83 percent of our population has a common cold each year. American industry loses, annually, about \$6 billion in working time because of the common colds of its employees. Many of our communicable diseases begin with the symptoms of a common cold. A cold is caused by an unknown number of viruses and their strains. Because not all the viruses are known, no drug can prevent or treat all colds. When certain viruses and their strains have been isolated, there may be a cold vaccine.

Discharges from the nose and mouth of a person with a cold are the sources of infection. These discharges are spread by direct contact from person to person. When an infected person coughs or sneezes, he sprays into the air thousands of tiny droplets. The droplets may be carried through the air as far as 12 feet and remain in the air as long as 3 hours. This is *droplet infection*.

The incubation period (interval of time from which the cause of a disease enters the human body until the first signs of the disease appears) of the cold is from 12 to 72 hours. Everyone is susceptible to the viruses of common colds. Only temporary immunity follows an attack of the common cold.

Signs of the cold are easily observed, such as:

- "Stiffness" in the nose
- Soreness and "scratchiness" in nose and throat
- Coughing
- Sneezing and sniffing
- "Runny nose" and discharges from the nose
- Watery eyes
- Tickling in the throat
- Possible fever
- Possible headache

Several methods of control can be employed to protect the individual from becoming infected with the cold viruses. People with colds, who are coughing, sneezing, and blowing their noses, should be avoided as much as possible. Following simple hygienic measures such as (1) washing hands with soap and water before eating or handling food; (2) not using towels, eating and drinking utensils, and toilet articles used by other persons; and (3) having sufficient sleep, rest, and proper diet can assist in reducing the possibility of a common cold.

For the person infected with a cold, simple intelligent health practices should be followed. These practices include:

- Going to bed at the first signs of the cold
- Keeping warm and dry, avoiding undue exposure
- Eating light meals with nourishing foods
- Covering the nose when sneezing and the mouth when coughing and properly disposing of paper handkerchiefs
- Blowing the nose carefully
- Washing eating and drinking utensils thoroughly
- Consulting the family physician if the cold persists for more than a week

Cold and cough "cure-alls" are the second largest selling group of packaged medicines. Some of the ingredients used in the cold remedies include painkillers, fever reducers, antihistamines, decongestants, vitamins, and antibiotics.<sup>3</sup> Until the viruses of the cold have been identified, no drug can prevent or treat colds. There is the possibility of a vaccine to prevent from 60 to 70 percent of all common colds.

## "STREP" THROAT

The prevention of rheumatic fever depends on prompt and thorough treatment of the "strep" throat. The cause of the "strep" throat is the streptococcus. The sources of infection are man's nose and throat discharges and objects contaminated with these discharges. Droplet infection is the most common method of spreading the streptococci. Incubation period ranges from 2 to 5 days. Signs of "strep" throat include:

- Rapidly developing high fever
- Severe pain in swallowing
- Tender, swollen glands below the jaw
- Back of the mouth red and swollen
- Tonsils possibly flecked with pus

Often one member of a family may be a "carrier" of the streptococci if sore throats and colds repeatedly occur within a family. There is the possibility of rheumatic fever when a person has a "strep" throat. Strepto-

<sup>3</sup> Theodore Berland. "Do Cold Cures Really Work." *Today's Health*, 39:48 (January 1961).



cocci multiply in the nose and throat even though the person has no sign of the infection. Family physicians should obtain throat cultures and have the streptococci identified in order to treat the "strep" throat successfully and destroy the streptococci.<sup>4</sup> Many of the methods of control taken for colds can be practiced for a sore throat.

## RUBEOLA AND RUBELLA

Rubeola is caused by the virus of measles. At least 4 million cases of measles occur in the United States in 1 year. The source of infection is the infected person's nose and throat discharges. These discharges are spread by (1) direct contact of droplet infection; or (2) indirect contact of eating utensils soiled with nose and throat discharges of infected persons. The incubation period is about 10 days to the initial fever and 14 days until the rash appears. Some of the signs of rubeola are:

- Fever and discomfort
- Nose and throat discharges
- Signs of a common cold
- Koplik spots—red and white pinpoint eruptions on the lining of the cheeks
- Puffy eyelids and eyes sensitive to light
- Dusky red skin eruptions extending over the body

Persons of all ages are susceptible. Complications may occur involving the sinuses, the middle ear, and the lungs. There are several control methods. Young children should not be exposed to persons with rubeola. The infected person needs medical care and should be isolated. Both concurrent and terminal disinfection should be practiced. No specific treatment is known. Live-virus and killed-virus measles vaccines have been developed.

Rubella (German measles) often escapes medical detection during epidemics because the virus of rubella spreads from person to person before medical diagnosis of the disease can be made. Source of infection is man's nose and throat discharges. Two methods of spreading the rubella virus are by droplet infection and articles soiled with the nose and throat discharges of an infected person. The incubation period averages about 18 days. The signs of rubella include:

- Rash
- Swelling of the lymph nodes in the neck and throat
- Nose and throat discharges
- Eruptions of small spots or elevations that are pale red and the size of a pin's head to a pea
- Rise of body temperature
- Enlarged lymph nodes in other parts of the body

<sup>4</sup> American Public Health Association. *Control of Communicable Diseases in Man* (9th ed.). New York: The Association, 1960, pp. 177-180.

Control measures include medical care by the family physician, no quarantine, no isolation, and no concurrent or terminal disinfection. A woman pregnant in the first 4 months should guard against rubella. There is no specific treatment.<sup>5</sup>

## CHICKEN POX

Chicken pox is a universal disease reported among 70 percent of the persons under 15 years of age and living in metropolitan communities. The cause is the virus of chicken pox. Secretions of the infected person's respiratory tract are the sources of infection. Two methods of spreading the virus are droplet infection and articles freshly soiled by discharges from the skin and mucous membranes of infected persons. The average incubation period is from 13 to 17 days. Some of the signs are slight fever, mild constitutional symptoms, succession of skin eruptions leaving a granular scab, skin eruptions more abundant on covered parts of the body, and shedding of scabs. Chicken pox is a more severe disease in adults than in children. As for the method of control, there is no isolation, quarantine, or specific treatment. Concurrent disinfection can take place by proper disposal and thorough cleaning of articles soiled by nose and throat discharges and fluids of skin eruptions.<sup>6</sup>

## MUMPS

This disease does not occur as frequently as measles and chicken pox. The cause is the virus of mumps, which is contained in the saliva of persons infected with the disease. The virus of mumps is spread by droplet infection and articles freshly soiled with saliva of infected persons. The average incubation period is 18 days. In milder cases, there is pain in the region of the parotid gland. In more severe cases, there are fever, vomiting, headache, and pains in the back of the limbs. These signs may precede pain and swelling in one or both parotid glands. In some cases, there is involvement of ovaries and testicles in persons past puberty. The central nervous system may be involved early or late in the disease. Isolation occurs for 9 days. There is no quarantine, terminal disinfection, or specific treatment. Concurrent disinfection can be acquired by thorough cleaning of eating and drinking utensils and of articles soiled with secretions of the nose and throat.<sup>7</sup>

## SCARLET FEVER

Scarlet fever spreads rapidly among children, even though a small number of adults will get the disease. The cause is the streptococcus. Dis-

<sup>5</sup> *Ibid.*, pp. 113-115, 160-162.

<sup>6</sup> Kenneth F. Maxcy. *Rosenau Preventive Medicine and Public Health* (8th ed.). New York: Appleton-Century-Crofts, Inc., 1956, pp. 23-25.

<sup>7</sup> *Ibid.*, pp. 37-40.

charges of the nose and throat from an infected person are the sources of infection. The streptococci are spread by droplet infection and by objects contaminated by nose and throat discharges. The incubation period is from 5 to 12 days. Signs include a fever, bright-red skin rash, sore throat, and possible complications of the middle ear and kidneys. Several methods of control are used, among which are isolation, concurrent and terminal disinfection, no quarantine, and specific chemotherapy prescribed by the physician.<sup>8</sup>

## WHOOPIING COUGH

Most children, during infancy, have been immunized against whooping cough by the pertussis vaccine. Whooping cough is caused by the *Bordetella pertussis* bacillus. The source of infection is the patient with whooping cough in its early stages. The bacilli are spread by droplet infection and multiply rapidly in the finer bronchial tubes of the lungs without any sign of the disease. The incubation period extends at least a week or more. The signs include a cough at night during the early stages, discharges from the nose and throat, tears from the eyes, gagging and vomiting, and a "whoop" after a prolonged spasm of coughing.

Even if neighborhood children have been immunized, they should not come into contact with the child with whooping cough. Extra booster doses of the pertussis vaccine raise the child's protection against exposure to the bacillus. Methods of control include quarantine and isolation, concurrent and terminal disinfection, but no specific treatment. Most physicians advise four doses of the pertussis vaccine to provide adequate immunity.<sup>9</sup>

## INFLUENZA

"Grippe" and influenza are the same disease. Persons of 45 and older account for at least 90 percent of all influenza deaths. In 1 year, 12 million persons in the United States may have influenza. Four distinct viruses and their strains cause different types of influenza. Sources of infection are discharges of the infected person's mouth and nose. The viruses are spread by droplet infection and by articles soiled with discharges of the infected person's nose and mouth. The incubation period is from 24 to 72 hours. Signs include headache, weakness, chill followed by a fever ranging from 101 degrees to 103 degrees, muscle aches and pains, nausea, vomiting, sore throat, cough, and general discomfort. Although some patients show very few of these signs of influenza, other patients will show many of the signs. Control methods include isolation and concurrent disinfection. There is

<sup>8</sup> American Public Health Association, *op. cit.*, pp. 177-180.

<sup>9</sup> Louis Saver. "Whooping Cough—Most Dangerous Enemy of Infants." *Today's Health*, 39:38 (May 1961).

no specific treatment. However, vaccines do immunize persons against certain influenza viruses and their strains. At the present, no commercial vaccine gives protection against all influenza viruses and their strains. A vaccine may be developed that will provide immunity to all known types of viral influenza.<sup>10</sup>

### PNEUMONIA (Acute Lobar)

When influenza weakens the patient so that bacteria become involved, pneumonia occurs. Pneumonia is caused by the *Diplococcus pneumoniae*. The source of infection is the respiratory secretions of pneumonia patients and carriers. Pneumococci are spread by droplet infection and by articles soiled with discharges of the nose and mouth from infected persons. The incubation period is not well determined but is believed to be from 1 to 3 days. Signs of pneumonia are chill followed by fever, pain in the chest, and difficult or labored breathing. Methods of control include concurrent and terminal disinfection, but no isolation and quarantine. Specific chemotherapy prescribed by physicians is used in the treatment.<sup>11</sup>

### INFECTIOUS HEPATITIS

Acute hepatitis is the reaction of the liver to infection, drugs and chemicals that produce allergic reactions, toxic chemicals, and a blood deficiency caused by a temporary circulatory disturbance. Acute hepatitis has two major forms: viral and toxic. Viral hepatitis, the most common, is caused by two different viruses, which are spread in entirely separate ways. Infectious viral hepatitis is transmitted by human waste and by close personal contact. Serum viral hepatitis can be spread only through the blood. Toxic hepatitis is not as common as viral hepatitis and may be induced by certain chemicals taken by mouth, absorbed through the skin, or inhaled.

Infectious hepatitis can be spread not only by human contact but also by food and water contaminated by fecal matter containing the virus. Also, the virus may pass among members of a family and residents of a community. Incubation period of infectious hepatitis may take from 1 to 2 months. This is one of the reasons for the difficulty in tracing the routes of infection of the hepatitis viruses. Another reason is the indefinite number of hepatitis carriers. The severity of an attack of hepatitis depends on the age and physical health of the person infected, the virulence of the virus, and the amount of infection.

The first signs of hepatitis are fatigue, loss of appetite, and discomfort. Later, other signs appear:

<sup>10</sup> Howard Earle, "Influenza: Ancient Scourge Still a Threat to Health," *Today's Health*, 40:24 (November 1962).

<sup>11</sup> American Public Health Association, *op. cit.*, pp. 112-114.

Gradual darkening of the urine  
 Abdominal pain  
 Itching skin  
 Metallic taste in the mouth  
 Drop in pulse rate  
 Nausea  
 Diarrhea  
 Fever ranging between 100 and 101 degrees

These signs may last from a few days to 3 weeks. After that time, the liver enlarges and the whites of the eyeball become yellow. This "yellowing" may occur in the skin. If the attack of infectious hepatitis is more severe, the patient may show loss of emotional control, mental confusion, hysteria, and a substantial loss in weight.

Infectious hepatitis does not respond to antibiotics or other specific medications. However, prompt medical care must be obtained. Any permanent damage to the liver or infection of other organs must be prevented. The patient is isolated for a month and has complete bed rest. Following recovery from the acute stage of the disease, a critical period follows. The prolonged period of recuperation must strictly adhere to the rules established by the physician. If the rules are not followed, there may be a relapse, which can cause permanent damage to the liver. Short-term immunity for a 6-to-8-week period can be given. The immunity is provided by an injection of gamma globulin, 6 days before the hepatitis attack. To further protect oneself, one should avoid coming into contact, breathing, drinking, or eating anything that may be contaminated with the virus.<sup>12</sup>

## INFECTIOUS MONONUCLEOSIS

Common among elementary and secondary school pupils and college students is glandular fever or infectious mononucleosis. The cause is unknown, although a virus is suspected. The incubation period ranges from 4 to 14 or more days. Signs include prolonged sore throat, headache, discomfort, fever, nausea, vomiting, loss of appetite, and enlargement of the lymph glands in the armpit, neck, and groin. In addition, there may be pain in the upper part of the abdomen caused by a tender or enlarged spleen. Hepatitis may be present. A sore throat may be incidental or painful for several days. On the throat of the patient is a white pasty exudate. Either at the onset or several days after the onset of the disease, pharyngitis is present. The urine may be bloody and a rash may appear on the abdomen. The patient may experience double vision, difficulty in

<sup>12</sup> Bernard Seeman. "Hepatitis, a Growing Health Menace." *Today's Health*, 39:40 (June 1961).

chewing and swallowing, impaired memory, drowsiness, and facial weakness. There may be involvement of the heart muscles. Certain clinical laboratory tests assist the physician in his diagnosis. These tests indicate the range of leukocyte and lymphocyte counts. The control measures include hospitalization for a period of 10 days and chemotherapy as prescribed by the physician.<sup>13</sup>

## EXCLUSION OF THE PUPIL WITH COMMUNICABLE DISEASES

A school's exclusion procedures can succeed if school personnel and parents understand the purposes of these procedures. Exclusion of the pupil ill with a communicable disease protects other pupils and school personnel from contagion and hastens the recovery of the excluded pupil. Schools that stress perfect attendance at the cost of the pupil's health will not be able to carry out these purposes. The pupil with a severe cold who remains in school spreads the cold to other children and school personnel. When he is at home and in bed, his body has a chance to fight the contagion, and he does not transmit the cold to others.

School personnel should follow standard procedures regarding the exclusion of pupils because of such communicable diseases as measles, colds, impetigo, conjunctivitis, pediculosis, ringworm, and other infectious diseases. When the signs of a possible communicable disease are observed by a teacher, the pupil should be separated from his classmates and sent to the school nurse. When there is no school nurse, the pupil should be sent to the school principal for permission to be excluded from the class; the parents must be notified, the pupil sent home, and the parents encouraged to seek medical attention. In secondary schools, the student is excused from school. The teenager, however, should be encouraged to feel that it is his responsibility to seek medical attention for himself. The isolation and exclusion of the pupils should be carried out consistently by all school personnel.

The ill pupil should never leave school unattended or arrive at an empty home. Usually parents come to the school and take the pupil to his home. When the parents cannot be reached, the health record of the pupils should be consulted for the names of relatives and the family physician and their telephone numbers. If this information is not given on the health record, a physician from a panel of cooperating local physicians might be chosen. In severe emergencies, local hospitals can be used in accordance with the procedures for emergency care. Notification of parents, pupil's transportation to his home, and school personnel's

<sup>13</sup> Imogene Hazzard and Jessie Helen Haag, "Infectious Mononucleosis among Young Adults," *Journal of School Health*, 27:237 (October 1957).

encouragement of parents to seek medical attention cannot be over-emphasized. The follow-through by the nurse will check whether the parents did or did not obtain medical care for the excluded pupil.

The personnel of local school health services should submit to the local board of education written policies and procedures for the exclusion of the pupil with communicable diseases. The policies and procedures should include provisions for the pupil to be legally excused from school when he shows signs of a possible communicable disease during a particular school day. The written policies and procedures should include notification of parents by health services' personnel or by teachers, medical care, pupil transportation, follow-through, American Red Cross First Aid given to the pupil before the parent or physician arrives, and record of the care given to the pupil by school personnel.

Parents should realize the necessity for cooperating with the school's exclusion procedures. Health bulletins, PTA programs, and community-wide health action can orient parents about exclusion procedures. The pupil excluded from school because of illness should be isolated from other children and remain at home under medical care. Too often he is allowed to play with the neighborhood children or returns to school for the afternoon session.

Known cases of communicable diseases among pupils should be reported to the local health department. Little can be done to prevent the spread of contagion within a community when the health department has not been informed about ill students excluded from the schools. The reporting to the health department can be done by the school nurse or principal immediately following teacher observation of signs of possible communicable diseases. Other members of the pupil's family are usually scrutinized for signs of the disease by physicians of the local health department or by public health nurses. When brothers and sisters of the excluded pupil are in other school buildings, school nurses cooperate with the local health officials in reporting signs of communicable diseases among these other members of the family. The local health department should continuously inform school administrative officials and school nurses of reported cases of communicable diseases within the community. In this way, school personnel can keep close observation upon students from stricken community areas.

The control of communicable diseases is a joint project of the schools and the local health department. The effectiveness of the project depends on the consistency of early recognition of signs of communicable diseases, exclusion of pupils with communicable diseases, notification of the parents, parents' willingness to seek medical care, and notification of the local health department. Surveys made by school superintendents show that many local boards of education have not developed policies and procedures for the exclusion of the pupil with a communicable disease.

## READMISSION OF THE PUPIL RECOVERED FROM A COMMUNICABLE DISEASE

School readmission procedures should adhere to regulations established by public health officials and state and local health laws and ordinances. To readmit a pupil into the school during the period when he should be excluded would be flagrant display of the school's disregard for public health.

The family physician will indicate when the pupil ill with a communicable disease can return to school. A certificate bearing the physician's signature might be used to indicate that the pupil has fully recovered from the disease. If pupils have no family physician, a certificate signed by a physician of the local or county health department might serve the same purpose. If possible, the same physician should be the person to determine when the pupil is fully recovered from the disease and can return to school.

In addition to the physician's certificate, some schools require that the returning pupil report to the school nurse. The nurse checks the pupil's temperature, observes his appearance and behavior, and is alert for any sign indicative of a recurrence of the disease. These procedures can be completed in the school's health service unit.

## RHEUMATIC FEVER

Prevention of rheumatic fever is dependent on early recognition and treatment of "strep" throat. Following streptococcal infections, certain families and persons have greater tendencies to develop rheumatic fever. There is no test to determine the degree of susceptibility to rheumatic fever. No one becomes immune to rheumatic fever after one attack. Actually, the person becomes vulnerable for further attacks. Each attack of rheumatic fever may injure the heart.

Although rheumatic fever can occur at any age, it commonly occurs between the ages of 5 and 15. Rheumatic fever develops 2 or 3 weeks after the "strep" throat. The person has a sore throat and fever, recovers, feels well for 1 or 2 weeks, and then suddenly has rheumatic fever. The possibility of rheumatic fever is always present when a person has a streptococcal infection.

## "STREP" THROAT

The interval of time between the sore throat and onset of rheumatic fever is the length of time necessary to develop rheumatic fever. When the person has the "strep" throat, the streptococci multiply in the nose and throat. At this time, the streptococci form a *product* which is absorbed into the body. If the product circulates throughout the body,



the inflammation of rheumatic fever occurs by a reaction similar to that of an allergy.

## SIGNS

There are several misconceptions about rheumatic fever. Many children do not have inflammation of the joints. Pain in children's joints may be so mild that no attention is given to it. If the joints are inflamed, the joints may return to normal without serious injury. Saint Vitus' dance or chorea may not be associated with any pains or inflammation of the joints. The significant factor of rheumatic fever is possible inflammation of the heart.

In young children, inflammation of the heart is more frequently involved than inflammation of the joints. In children between the ages of 5 and 10, signs may be deceptive and fever may be low. The child may be tired, anemic, and fail to gain weight. His nose may bleed without any apparent reason. Circular, dull, red blotches may develop on his skin, leaving a clear area of skin in the center. Painful hard lumps may appear at the joints, the spinal column, and back of the head. Children complain of vague aching in the arms and legs. When an older person has rheumatic fever, one or two joints become inflamed. The knees, wrists, and elbows become hot, painful, and swollen. The person has a high fever.

## SAINT VITUS' DANCE OR CHOREA

In some cases of rheumatic fever, Saint Vitus' dance or chorea may be the only sign of the disease. Saint Vitus' dance occurs when rheumatic fever affects the nervous system. When Saint Vitus' dance is severe, the person jerks and has uncontrollable movements. The first signs of Saint Vitus' dance are emotional disturbances and clumsiness. Severe signs indicate that the person cannot control the muscles of the face, tongue, arms, and legs. Most attacks of Saint Vitus' dance last from 6 to 8 weeks and require careful medical treatment.

Neither the severity of the signs of rheumatic fever nor Saint Vitus' dance indicates the degree of injury to the heart. It is possible that the person may have severely inflamed joints or Saint Vitus' dance without heart involvement.

## MEDICAL CARE

Unfortunately, an attack of rheumatic fever is not completely over when the pains in the joints, fever, or chorea have disappeared. The child may feel and look better but the smoldering activity of rheumatic fever continues for from 2 to 4 months. So that the heart muscle has rest, the person must remain in bed. Only the physician can determine when the patient may enjoy slight activity. Some patients are allowed to sit up

and walk around the room within a few weeks; others must remain in bed for several months.

With each new streptococcal infection, the person has a 50-percent chance of another attack of rheumatic fever. Thus the patient with rheumatic fever must not have streptococcal infections. If the heart is not injured with the first attack, it may be injured during the second attack. Further inflammation and scarring of the heart can occur if the heart was injured in the first attack. There is always the possibility of heart involvement with each attack of rheumatic fever.

In patients with rheumatic fever, streptococci can cause subacute bacterial endocarditis. The streptococci invade the injured heart valves and cause permanent damage. Prophylactic penicillin is given during the onset of rheumatic fever, at convalescence, and after recovery. Within 5 years following the first attack of rheumatic fever, there may be another attack. Rheumatic fever recurs most frequently during youth and less frequently after age 30.

## LEGACY OF RHEUMATIC FEVER

Rheumatic heart disease may be evident when heart murmurs develop during an attack of rheumatic fever. Sometimes the heart murmur does not signify that rheumatic heart disease is present. The murmur is the stream of blood rushing through a valve that has been scarred during the inflammation of the heart. The heart valves may not function efficiently because the scar tissue has deformed the valves. In one person, the inflammation may be mild, whereas in another person it is severe. More scar tissue may be found in one person than in another person. Even though more than a million Americans live restricted or shortened lives because of rheumatic heart disease, the majority of patients with the disease lead normal lives. However, the medical care that the patient with rheumatic fever receives during the attack and following his recovery has considerable bearing on whether the disease may recur.<sup>14</sup>

## WHAT CAN SCHOOL PERSONNEL DO?

The teacher can help the pupil who has recovered from rheumatic fever and returned to school by:

1. Obtaining information from his parents and/or from his family physician of the severity of the attack of rheumatic fever
2. Encouraging the pupil to participate in adapted physical education
3. Encouraging the pupil to follow the physician's recommendations regarding stair climbing, rest periods, and supplementary school feeding

<sup>14</sup> Norman Roberg. "Rheumatic Fever, How Dangerous Is It?" *Today's Health*, 39:30 (July 1961).

4. Avoiding any implication that the pupil is an invalid
5. Encouraging him to avoid respiratory infections
6. Watching for signs of fatigue
7. Discouraging perfect attendance
8. Encouraging meticulous health habits, for example, hand washing
9. Allowing the pupil to rest when he becomes tired
10. Including a unit on rheumatic fever during the direct health instruction

In addition, teachers can evaluate their health habits, for example, transmission of streptococcal infections. Teachers can modify daily school activities and promote environmental sanitation in the school.

## TUBERCULOSIS

At least 36 million Americans were infected with the causative agent of tuberculosis within the past year. Tuberculosis is caused by the tubercle bacillus. A person having active tuberculosis spreads these bacilli by direct personal contact; through his sneezing or coughing, the bacilli are spread by droplet infection. The other method of spreading the tubercle bacilli is by indirect contact. Anything that has been used by or comes within range of the cough or expectoration of the infected person can carry the tubercle bacilli.

More than 2.2 million persons, under 25 years of age, are infected with the tubercle bacillus. Thus the individual has definite responsibilities for control of tuberculosis. These responsibilities include a yearly medical examination, tuberculin testing or chest x-ray as prescribed by the family physician, and good personal health. The individual should consult his family physician if chronic cough, blood spitting, night sweats, loss of weight, fever, fatigue, or pain in the chest appears.

## WHAT IS TUBERCULOSIS?

There are two forms of human pulmonary tuberculosis: primary and reinfection. The primary or first-infection tuberculosis occurs most frequently in the lungs. The bacilli invade the lung of a person who has never been infected. Lesions or "spots" are formed by the destructive action of the bacilli at locations in the lungs where the bacilli lodge. When the lesion heals, the destroyed lung areas are walled off from surrounding healthy tissue by fibrous capsules called tubercles. Later, these tubercles become calcified. Within the tubercles may be living bacilli that can do no harm as long as the tubercles remain intact. Later, these bacilli die as the calcification occurs.

In reinfection tuberculosis, the tubercle bacilli again enter the lung, or the tubercles break down and let the tubercle bacilli escape. Destruction of lung tissue is widespread, involving other sections of the same lung

in both lungs. Reinfection tuberculosis is encouraged by poor health and tubercle bacilli so numerous that they overcome the body's resistance.

Miliary tuberculosis can be present with primary and reinfection tuberculosis. Miliary tuberculosis develops when large numbers of the tubercle bacilli get into the blood stream and are carried throughout the body, and tiny tubercular lesions develop in most of the body organs. Generally, primary miliary tuberculosis heals itself without treatment. However, reinfection miliary tuberculosis may overcome the human body's defenses and possibly result in death.<sup>15</sup>

## DETECTION OF TUBERCULOSIS

The physician detects tuberculosis by a complete medical examination, tuberculin tests, chest roentgenograms, sputum examination, and gastric analysis. The tuberculin tests can use either O.T. (Old Tuberculin) or P.P.D. (Purified Protein Derivative). By the use of either of these test materials, a physician can distinguish between infected and noninfected persons. When the person is judged by the physician to have a positive reaction, the test reveals that infection has taken place. However, the positive reaction does not disclose the activity or inactivity of the infection or the location of the infection. Teachers should realize that a person judged to have a positive reaction must be given a series of chest roentgenograms to determine whether pulmonary tuberculosis is present.

The *tuberculin skin test* has three major purposes. First, it is used for medical diagnosis. When a person has suspicious symptoms of tuberculosis, a negative result to the tuberculin test indicates that tuberculosis is not responsible for the illness. When the test is repeated within 30 days and remains negative, tuberculosis is not the cause of the illness. Second, the test reveals the status of tuberculosis control efforts. New infections taking place and the number of active cases in persons not under treatment can be ascertained for epidemiological findings. Third, the person who has been infected can be discovered. These are the hidden cases of tuberculosis.<sup>16</sup>

There are several tuberculin skin tests. In the Mantoux tuberculin test, the physician injects a small amount of the test material into the skin. After 48 to 72 hours, the physician re-examines the spot where the injection was made. When a bleb is formed with induration (10 mm. or more in diameter), the person is judged to have a positive reaction. When no infection of tubercle bacilli has taken place in the person tested, the person is judged to have a negative reaction.<sup>17</sup>

<sup>15</sup> National Tuberculosis Association. *Diagnostic Standards and Classification of Tuberculosis*. New York: The Association, 1961.

<sup>16</sup> Floyd Feldmann. "The Tuberculin Test." *Tuberculosis Abstracts of the National Tuberculosis Association*, 29:No. 4 (April 1956).

<sup>17</sup> National Tuberculosis Association, *op. cit.*, pp. 34-37.

In the Heaf multiple-puncture tuberculin test, the test material is pushed into the skin. A small drop of the test material is applied to the skin. Six tiny sterile needles are gently placed in the center of the test material and painlessly puncture the skin. The intradermal penetration of approximately 1 mm. forms a  $\frac{1}{4}$  inch circle of six small punctures. Needles retract immediately after contact with the skin. The test can be read 3 to 7 days later.

Other tuberculin skin tests include the Tine Test and Mantoux Test by Hypospray. The Tine Test (Rosenthal) is a multiple-puncture test involving a plastic cartridge with two layers of four times concentrated O.T. dried on each of the four tips. The four tips are pressed against the skin. Thus the O.T. penetrates the skin surface. In a study of the Denver area, there seemed to be justification in the use of the Tine Test instead of the Mantoux test for routine screening procedures.<sup>18</sup> The Mantoux Test by Hypospray is a painless intradermal injection. It reduces the manpower needed to administer the test material and increases the number of persons receiving the test; and the hypospray unit is easily cleaned, sterilized, and prepared for use.<sup>19</sup>

In 1956, the San Francisco public and parochial elementary and secondary schools expanded the annual tuberculin skin testing. Four grade levels were chosen: first, seventh, tenth, and twelfth. An injection of O.T. was given intradermally on the inside surface of the forearm. The test was read 72 hours later. An area of induration of 6 mm. or more in diameter was considered a positive reaction. During 1956-1959, a total of 71,731 students were given tuberculin tests. Six percent were positive reactors. For each of these years, the percentage of students was

1956-1957	5.9 percent were positive reactors
1957-1958	6.7 percent were positive reactors
1958-1959	6.0 percent were positive reactors

These percentages do not include the number of contacts had by these students or the number of hidden tuberculosis cases coming into contact with these students.<sup>20</sup>

A person with a positive reaction to a tuberculin skin test receives a series of chest roentgenograms to disclose whether active tuberculosis exists in the lung. Chest roentgenograms will reveal an early case of tuberculosis before the case becomes infectious and at a time when the disease can be easily treated. The physician can detect an active advanced

<sup>18</sup> William F. Russell, Donald Rasmussen, and Mildred Doster. "Experiences with a New Method of Performing the Tuberculin Skin Test." *Journal of School Health*, 32:11 (January 1962).

<sup>19</sup> William Dougherty. "Mantoux Testing of Hypospray." *Journal of School Health*, 32:207 (June 1962).

<sup>20</sup> Francis Curry. "Tuberculin Skin Testing in San Francisco Schools." *American Journal of Public Health*, 52:616 (April 1962).

lesion, an unsuspected lesion, or scars of old arrested tuberculosis. Annual mass screening by chest roentgenograms are no longer considered necessary. Every attempt must be made, however, to have the following persons receive a chest roentgenogram: older males, men working in heavy industries, patients admitted to hospitals in cities of more than 80,000 population, people living under low economic conditions, health services personnel coming in contact with possible tuberculous patients, and members of families in which hidden cases of tuberculosis have been detected. In all instances, there must be careful and selective use of the chest roentgenogram.

## TREATMENT OF TUBERCULOSIS

When tuberculosis is detected in the lungs, the patient is isolated to prevent the spread of the disease. Isolation may take place in a sanitarium or tuberculosis hospital. The patient has absolute bed rest, sanitary environment, medical and nursing care, individualized nutritious diet, and adequate rehabilitation services. Complete rest for the infected lung is necessary for most patients. Streptomycin, para-aminosalicylic acid, and isoniazid retard the growth of the tubercle bacilli. A combination of these drugs has great value. Some patients can be treated with them without being hospitalized or sent to a sanitarium.

## TYPES OF TUBERCULOSIS CONTROL

The work of the National Tuberculosis Association, its state divisions, and its local chapters should be emphasized, together with tuberculosis control programs of state departments of health. Other types of tuberculosis control include the *Bacillus-Calmette-Guerin vaccines*, which are not widely used in this country. These vaccines merely prevent the spread of the tubercle bacilli within the individual. Given to persons who do not react to tuberculin tests, the vaccines never succeed in completely preventing the development of tuberculosis in all members of a vaccinated group. The vaccines prevent development of tuberculosis only in a portion of the persons infected with the virulent tubercle bacilli. Another objection to these vaccines is that the vaccines interfere with the values of tuberculin testing as a diagnostic means and as an index of tuberculosis control.<sup>21</sup>

## CERTIFICATION OF SCHOOLS

Qualifications by which schools can be certified as Class A or Class B have been established by a Committee on Tuberculosis of the American School Health Association. In schools certified as Class A tuberculin tests have been given to from 95 to 100 percent of the school-age popula-

<sup>21</sup> Gladys Hobby. "Prospects for a Vaccine against Tuberculosis." *NTA Bulletin*, 48:12 (May 1962).

tion. All reactors to the tuberculin tests have chest roentgenograms during the ninth and twelfth grades, followed by a complete medical examination. All nonreactors to tuberculin tests are retested every 2 years, preferably every year. School personnel are required to have tuberculin tests. Of school personnel, all nonreactors are retested every 2 years, preferably every year. All reactors have chest roentgenograms with a complete medical examination to disclose whether there are discharging tubercle bacilli. All students and school personnel with progressive tuberculosis shall receive adequate treatment while they are away from the school. Class B schools have all the above qualifications except that the percentage of pupils having the tuberculin test is from 80 to 95 percent. Through this school certification program, persons who are infected are identified; they need to be watched carefully, and of course, as possible sources of infection, they must not be allowed to spread the disease to others.<sup>22</sup>

## POLIOMYELITIS

With the availability of the Salk and Sabin polio vaccines, there is the possibility of eliminating poliomyelitis as a significant health problem. Polio is caused by a specific filtrable virus having an affinity for the human nervous system. There are three different types (Type I, Type II, Type III) of polio virus, each capable of causing polio. Because these three types exist, it is possible for a person to have polio more than once. Each of these types may be paralytic or nonparalytic polio.

The polio virus enters the body through the nose and mouth. It gains entrance to the intestinal tract, where it thrives. From the intestinal tract it passes into the circulatory system. The blood carries the virus to the central nervous system.

## TYPES OF POLIO

Polio virus attacks motor neurons controlling voluntary and involuntary muscle action. In most cases of polio (that are nonparalytic), the virus temporarily weakens but does not destroy the motor neurons. The patient recovers without muscular involvement. In the case of paralytic polio, a large number of motor neurons is destroyed. The muscles controlled by these motor neurons fail to function. The polio virus may attack the medulla controlling such involuntary muscular actions as the movements of the diaphragm, heart, and stomach. When the polio virus affects motor neurons of the medulla, the disease is called "bulbar polio." When it lodges in the spinal cord, it is called "spinal polio." A combination of spinal and bulbar polio ("spinal-bulbar polio") is the most severe type.

<sup>22</sup> J. Arthur Myers. "School Awards for Tuberculosis Control Measures in Progress." *Journal of School Health*, 30:310 (October 1960).

Poliomyelitis is a communicable disease affecting every age group. The polio virus does not attack all muscles of the human body; rather, groups of muscles in some specific part of the body are affected. The specific polio virus is spread through the polio patient's intestinal discharges and throat secretions.

Many persons can be carriers of the polio virus. These persons may be slightly ill for a few days with a cold. A person can strengthen his natural immunity to polio through the development of polio antibodies in his blood serum. Many older persons have gained immunity to polio through exposure to the polio virus over a period of years.

### SIGNS OF PARALYTIC POLIO

In a mild case of polio the illness may be of no more than one to several days' duration. In paralytic polio, the illness is of longer duration, with definite signs. There are fever, tremor and trembling of the hands, difficulty in swallowing, inability to talk plainly, pain and stiffness in the neck and back, inability to touch the chest with chin or knees, profuse perspiration without exertion, flushing of the face, severe headache, and muscle spasms. The medical diagnosis may be difficult in the early stages because the signs of polio are similar to those of other diseases.

### SALK VACCINE

A child or adult receiving four injections of Salk vaccine has protection against paralytic polio. The Salk vaccine consists of the polio virus of all three types. This virus is grown on cells of monkey kidney tissue in a complex nutritive fluid. When the polio virus has grown on these cells, the solid material is filtered out; the remaining fluids contain the virus. The fluids are treated with formaldehyde to destroy the ability of the virus to cause polio. This treatment is called "inactivation" of the polio virus. However, the virus retains its ability to bring about active immunity by stimulating the human body to produce polio antibodies. The antibodies can prevent the polio virus from reaching motor neurons.

The Salk vaccine is given in four injections. One cubic centimeter of the vaccine is injected. The first injection sets the antibody production in motion in about 2 week or 10 days. The second injection is given about 6 weeks after the first injection and sets antibody production in full swing. The third injection is given 6 weeks after the second injection. The fourth injection or "booster" is given 6 months or more after the third injection. After the fourth injection, the production of antibodies rises sharply and the greatest protection from polio is then obtained.<sup>23</sup>

<sup>23</sup> "What You Should Know about the Polio Vaccine." New York: The National Foundation, 1962, p. 2.



## SABIN VACCINE

The oral Sabin vaccine can be taken in sugar cubes impregnated with 3 drops of the vaccine, 3 drops in a half cup of water, or 3 drops directly in the mouth. The oral vaccine consists of the polio virus of all three types. This virus is "live"; when swallowed, it will multiply and stimulate the production of antibodies in the blood and intestines. Because the intestines are the breeding ground for the polio virus, the intestines must be made a hostile home for the virus. The Sabin vaccine produces antibodies in the intestines so that the polio virus has no place in which to grow. The polio virus of the Sabin vaccine has been "tamed" so that the virus cannot cause paralytic polio.<sup>24</sup>

The Sabin vaccine is given in three doses. All three types of the Sabin vaccine must be taken, because each type of the vaccine immunizes a person against one type of the polio virus. The first dose protects the person against the Type I polio virus. The second dose, given 6 weeks later, immunizes the person against Type III polio virus. The third dose, given 6 weeks after the second dose, protects against Type II polio virus. It is recommended that babies receive a fourth or "booster" dose of all three types given simultaneously 6 or more months after the third dose. The same schedule applies to all ages and may be started at 6 weeks of age.<sup>25</sup>

Persons ill with a high fever should postpone taking the Sabin vaccine. Persons with colds, sore throats, or respiratory types of influenza can have the Sabin vaccine. Children under 6 should have the sugar cube placed directly in their mouths. If a person has had polio or has had the Salk vaccine, he can receive a booster effect if he takes all three types of the Sabin vaccine.

The length of immunity for the Salk and Sabine vaccines is not known at present. No one should postpone receiving the Salk or Sabin vaccine; the polio virus can enter the human body at any time. Some persons receive their vaccines too late, after the virus has entered and multiplied within their intestinal tract and circulatory system.

## WHAT CAN SCHOOL PERSONNEL DO?

A pupil returning to school following recovery from polio may need adapted physical education. He may have rest periods and supplementary feedings. He should be watched for signs of fatigue, be encouraged to join group activities, and have some modification of his schoolwork as suggested by his family physician.

In direct health instruction, teachers can present the facts about the

<sup>24</sup> Theodore Berland, "Doctor Sabin's 30 Year War with Polio," *Today's Health*, 40:54 (September 1962).

<sup>25</sup> "What You Should Know about the Polio Vaccine," p. 3.

types of polio, Salk and Sabin vaccines, and the importance of prevention of polio. After the Salk vaccine was declared safe and effective, epidemics of polio occurred in the United States. Often the polio-stricken patient was the father or mother of a family, a college or a high school student, or a child who had not received the Salk vaccine. Thus the prevention of polio by the Salk and Sabin vaccines can reduce the possibility of polio.

## TETANUS

At least three fourths of our adult population and two thirds of our children lack immunization against tetanus. Although this second deadliest poison affecting man is easily prevented by immunization, every year 200 persons die from tetanus, and there is an alarming increase in the reportable cases. About 11 million children are vulnerable to tetanus.

Most persons acquire the *Clostridium tetani* through a puncture wound or through a variety of minor scrapes, scratches, or burns. The wound may be so slight that it is not noticeable. Not only do the *Clostridium tetani* live in the intestinal tract of man but they also are found in cattle, horses, domestic animals, soil, and street dirt, and on clothing. The *Clostridium tetani* are anaerobic and release a poison that attacks the central nervous system. Once the *Clostridium tetani* have entered the wound, they go into a resting stage, in which they produce spores. Length of life of these spores can be weeks, months, or years. If the conditions within the wound are favorable, the *Clostridium tetani* multiply and produce a poison even though the wound may have healed. The poison acts on the nervous system and involves the muscles of the urinary and lower intestinal tract as well as the muscles of the respiratory system.

The first signs of tetanus are irritability, restlessness, and muscular stiffness in the jaw, neck, or limbs. At this stage, the poison has reached the brain. As the poison attacks the nervous system, rigidity occurs within muscles. The jaw muscles become clenched, and the commonly named "lock jaw" results. The "sardonic smile," consisting of a wrinkled forehead, extended corners of the mouth, and lifted eyebrows, appears. Stiffness occurs in the neck, back, arms, and legs and rigidity takes place in the abdominal musculature. Profuse sweating accompanies violent and painful convulsions. During the convulsion, the tetanus victim may be unable to speak or cry out. Muscular spasms become prolonged, painful, and more frequent.

As the poison continues its attack on the nervous system, the swallowing of food and water becomes difficult. Muscles of the urinary and lower intestinal tract become involved. In fatal cases, temperature rises toward the end. As the symptoms become intensified, muscles of respiration become involved. Death from asphyxiation may result.

Nothing can be done to counteract the poison that has reached the

nervous system. Medical treatment is directed at preventing further attacks on the nervous system by the poison. Cleansing of the wound, medication to neutralize the *Clostridium tetani* and its poison, sedation to reduce damage caused by the convulsions, and constant nursing care may help the victim. It is possible that medical therapy may not be effective.

To prevent the risk of this deadly poison, a series of three injections of the tetanus toxoid must be given *before* there is chance of infection. The first two injections are given a month apart and the third injection is given within 6 months to a year. Booster doses are repeated every 5 years. The tetanus toxoid is given to children as part of a triple vaccine that immunizes against whooping cough and diphtheria.<sup>28</sup>

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- <sup>28</sup> Ro. (October) Hendrickson. "The Second Deadliest Poison." *Today's Health*, 41:56 (33).

## EMERGENCY CARE

A pupil may become ill or injured during the school day. To school personnel, the pupil's illness or injury raises questions concerning the care of the pupil, notifying the parents, medical attention, transportation of the pupil to his home or family physician, and the role of the school nurse. School personnel must know procedures for emergency care in order to avoid legal liability for proved negligence.

Rosenfield defines negligence as "... the failure to act as a reasonably prudent and careful person would under the circumstances involved."<sup>1</sup> When a pupil becomes ill or injured, the teacher is expected to give proper American Red Cross First Aid, notify the parents, seek medical care if needed, arrange transportation to the physician or to the pupil's home, and provide information regarding the emergency care procedures on a permanent record. If she follows all these regulations, she cannot be proved to be negligent in emergency care. If there is evidence of no emergency care or inadequate emergency care, there exists the possibility of proved negligence.

There should be an accessible roster of all students with their home addresses and telephone numbers, a list of hours when parents are at home, a list of parents' business addresses and telephone numbers, a list of family physicians' addresses and telephone numbers, a roster of teachers with their daily activities, and pupils' daily class schedules. Information concerning students, parents, and physicians should be in each teacher's classroom or laboratory.

A waiver from parents should be acquired, permitting school personnel to transport the pupil to a physician in the event the pupil needs medical care and the parents cannot be reached. Waivers should be similar in content for grades 1 through 12, be filed in a central location, and dated for a period of one year.

<sup>1</sup> Rosenfield, Harry. *Liability for School Accidents*. New York: Harper & Row, Publishers, Inc., 1940, p. 3.

## GENERAL DIRECTIONS

School personnel should realize when providing emergency care that nonmedically prepared school personnel must not attempt to diagnose an illness or injury. The emergency care to a pupil is American Red Cross First Aid. Internal medication is avoided.

Most schools have been rather emphatic that school personnel not use antiseptics, internal medications relieving pain, and stimulants. Only in rare instances have physicians prescribed the use of antiseptics, medication, and stimulants, and the directions for their use. The directions are forwarded to the school or public health nurse from the family physician. All school personnel should be informed that headache tablets, laxatives, painkillers, and home remedies are *not* used.

If the pupil refuses emergency care, parents should be notified and assume their responsibilities. In these instances, the teacher must decide if the illness or injury is serious enough to warrant immediate American Red Cross First Aid or immediate medical care regardless of the pupil's wishes.

Emergency care for the ill or injured pupil may cover a wide range of illnesses and injuries. Illnesses and injuries common to school-age children will be presented in this chapter. Detailed instructions for every type of possible illness and injury should be known to school personnel. Prevention of further illness or injury, relief from pain, proper transportation, and placing the responsibility for treatment with the physician are important. American Red Cross First Aid covers the immediate and temporary care to the ill and injured pupil until medical care is provided.

In Chapter 6, the isolation and exclusion of the pupil having communicable diseases and his readmission to school were stressed. These measures of controlling diseases were included so that the contagion would not spread and immediate medical treatment could be obtained.

These following procedures are helpful when there are injuries to bones, joints, muscles, and internal organs; serious bleeding; stoppage of breathing; poisoning; and unconsciousness. The pupil should be lying down in a comfortable position. He should be warm and should maintain normal body temperature. The first-aiders must be calm and stay with the pupil and must not be hurried into moving him. Injuries to the pupil should be checked. The first-aiders never give the unconscious pupil anything to drink except in cases of poisoning by mouth. The first-aiders reassure the pupil by informing him of the first-aid procedures and how these procedures will help him. In addition to these procedures, the first-aiders should make a second check of all injuries, give first-aid to minor as well as major injuries, avoid lifting the injured pupil, and loosen clothing if the injured pupil is unconscious.

## TYPES OF ILLNESSES OR EMERGENCIES COMMON TO SCHOOL-AGE CHILDREN

Immediate medical care will be needed in asphyxiation, electrocution or electric shock, gas inhalation, heart failure, heat exhaustion, heat stroke or sunstroke, poisoning by mouth, and unknown causes of unconsciousness. While American Red Cross First Aid is being given, the physician should be summoned or student transported to the physician.

It is possible that other illnesses or emergencies can become so severe that immediate medical care is needed. Hives occurring in the trachea can reduce the amount of oxygen reaching the bronchi and lungs. Intensive vomiting will require immediate medical care. Thus the following illnesses or emergencies may include those always requiring immediate medical care *and* those which may or may not need immediate medical care. Careful attention to American Red Cross First Aid procedures will disclose immediate medical care.

<i>Illness/Emergency</i>	<i>Description</i>
Allergy	An individual's natural hypersensitiveness to an antigen.
Appendicitis	Pain in upper- or lower-right section of the abdomen. Possible nausea and vomiting. Fever. Constipation or mild diarrhea.
Asthma (bronchial)	Allergic disorder characterized by difficulty in breathing, coughing, expectoration, and a sense of constriction in the chest.
Constipation	Bowel action irregular, infrequent, or incomplete.
Diarrhea	Abnormal frequency of bowel action with feces of watery consistency.
Earache	Pain, tenderness, or swelling about the ears. Discharges and possible noises in the ears.
Electrocution or electric shock	Person not breathing. Body burned where wire contacted body. Body rigid. Face blue in color.
Fainting	Temporary loss of consciousness resulting from an insufficient amount of blood sent to the brain.
Foreign object in the eye, ear, nose, and throat	Cinder or dust on eyeball; kernel of corn, seed, or nut placed into ear or nose; safety pin, small coin, piece of jewelry, or dental object lodged in throat.

<i>Illness/Emergency</i>	<i>Description</i>
Frostbite	Skin slightly flushed at first. As frostbite occurs, skin white or greyish-yellow. Blisters appear. Pain at times. Frostbitten part feels cold and numb.
Gas inhalation	Person not breathing. Face red and odor of gas persists.
Heat exhaustion	Nausea and headache. Profuse perspiration. Extreme weakness. Skin pale and clammy. Possible vomiting. Temperature above normal.
Heat stroke or sunstroke	Dry skin. Headache. Rapid pulse. Possible nausea and dizziness. Unconsciousness in severe cases. Temperature above normal.
Heart failure	Bluish color of lips and above fingernails. Shortness of breath. Chest pain. Chronic cough. Swollen ankles.
Hernia	Protrusion of a part of an organ against the abdominal musculature. Often called a rupture.
Hiccup	Automatic contraction of the diaphragm resulting in closure of the glottis and causing characteristic sound.
Hives	Small pink and white skin elevations of various sizes resulting from an allergen within or outside the body. Intense itching.
Insect bites	
Bee and wasp stings	Swelling, redness or small spot of blood.
Black widow spider bites	Redness and local swelling. Instant severe pain. Profuse perspiration. Difficulties in breathing and speaking. Abdominal cramps.
Chiggers	Irritation appearing after exposure.
Scorpion stings	Local swelling and discoloration. Pain. Dangerous species may provide tingling or burning sensation, discomfort, restlessness, nausea, and abdominal cramps.
Menstrual cramps (dysmenorrhea)	Painful menstruation.
Nosebleed	Bleeding from nose caused by injury to the nose or some other condition such as rheumatic fever.
Pallor	Paleness. Normal skin coloration disappears.

<i>Illness/Emergency</i>	<i>Description</i>
Poisoning by mouth Types of poisons Cleaning fluids Cosmetics Germicides Household cleaners Insecticides Medications Paint and paint products Petroleum products Rat poisons, etc.	Variety of signs caused by kind and amount of poison taken, plus time elapsed since taking poison. In some cases, poison absorbed before signs appear. Burns around mouth. Abdominal pain. Nausea and vomiting. Visual disturbances. Headache. Convulsions. Deep sleep. Breath odor may reveal poison.
Shock	Failure of normal circulation of blood, creating a depressed state of all body functions.
Skin irritations caused by poisonous plants Poison ivy (Rhus radicans) Poison oak (Rhus diversiloba) Poison sumac (Rhus vernix)	Small, swelling, red itchy spots. Blister formation on skin. Irritation following scratching. Infected blisters with pus.
Stye	Glands surrounding roots of eyelashes become infected.
Toothache	Pain due to dental caries, periodontal diseases, or other dental problems.
Unconsciousness—cause unknown	Person unconscious. May or may not be breathing.
Vomiting	Matter expelled from the stomach through the mouth.

## TYPES OF INJURIES OR EMERGENCIES COMMON TO SCHOOL-AGE CHILDREN

Immediate medical care will be needed in uncontrollable severe bleeding, simple and compound fractures, bites of poisonous snakes and rabid animals, third-degree burns, injuries to eyes and brain, internal injuries, and severe infections from wounds. While American Red Cross First Aid is being given, the physician should be summoned or the student transported to the physician.



It is possible that other injuries or emergencies can become so severe that immediate medical care is needed. Tetanus can easily develop in a puncture wound. Second-degree burns can become infected. Thus the following injuries or emergencies may include those that always require immediate medical care *and* those that may or may not need immediate medical care. Careful attention to American Red Cross First Aid procedures will disclose immediate medical care.

<i>Injury/Emergency</i>	<i>Description</i>
Bleeding	Loss of blood
Arterial bleeding	Bright red. Pulsating.
Venous bleeding	Dark red. Steady flow.
Bruise	Superficial injury to the skin without causing a wound. Discoloration. Swelling.
Burns	Classified according to depth or degree
First degree	Redness of skin
Second degree	Blisters
Third degree	Destruction of dermal skin cells. Charring
Chemical burns	Pain. Redness. May have tissue destruction.
Sunburn	First- or second-degree burns. Swelling of the skin. Fever. Headache.
Thermal burns	Second- or third-degree burns. Infection. Shock. Size of burn may be extensive.
Dislocation	Displacement of a bone or bones at a joint resulting from ligaments partly or completely torn.
Eye injury (surface of eyeball)	Penetration of foreign objects on surface of eyeball or a fraction of an inch <i>into</i> the eyeball. Chemicals such as slaked lime are included.
Fracture	Break in a bone.
Simple fracture	Not associated with an open wound, but extending from the skin to the fracture area. Swelling, deformity, tenderness, and pain on motion. Discoloration of near-by skin.
Compound fracture	Broken end of bone tears through the skin. Wound adjacent to fracture. Bone slips back into the skin or protrudes. Easily infected. Serious bleeding. Discoloration of nearby skin.
Head injury	Obtain history of accident. Presence of swelling or wound. Pupils of unequal size. Small amount of blood from nose, ear canal, or mouth may

*Injury/Emergency**Description*

	appear. Paralysis of one or more extremities may occur. Face pale, flushed, or normal in color. Pulse slow, fast, or normal. Headache and occasional dizziness. Unconsciousness may occur.
Infections from wounds	Wound appears red, warm, swollen, and tender. Pus. Red streaks extend from wound. Small lumps in armpits or groin indicate involvement of lymph glands. Headache. Fever.
Rabid animal bite	Puncture wound where rabies virus can reach sensory nerve endings. Bites on face, neck, and head especially dangerous. Teeth marks on skin. Saliva around wound. Bites through clothing, such as a coat sleeve, not as dangerous as bites on exposed skin surface. If animal licks any opening on skin, rabies virus has a point of entry.
Snake bite	
Nonpoisonous	Scratches rather than puncture wound. Some pain. No swelling. Marks of upper teeth. No large fang holes.
Poisonous	Puncture wound. Swelling, discoloration, and fang holes. One or two large fang holes. There may or may not be marks of upper teeth. Victim shows general weakness, nausea and vomiting, shortness of breath, rapid and weak pulse, and possible dimness of vision. Possible unconsciousness.
Copperhead	
Coral snake	
Cotton-mouth	
mocassin	
Rattlesnake	
Sprain	Violent stretching or twisting of a joint, causing partial or complete tears of some supporting ligaments of that joint. Swelling, pain on motion, tenderness, and discoloration.
Strain	Overstretching or overexertion of a muscle or tendon. Soreness and stiffness of a muscle or muscles.
Wounds	Break in the skin or mucous membrane.
Abrasion	Skin or mucous membrane rubbed or scraped off.
Incised	Straight, sharp cut. Bleeds freely.
Lacerated	Jagged or torn, having extensive tissue damage.
Puncture	Deep, penetrating wound.
Gunshot	Small surface wound. Bullet may be deep or close to skin surface. Possibility that bullet will cause fracture. Possible extensive wound in some cases.

## NECESSITY FOR AMERICAN RED CROSS FIRST AID

School personnel should be encouraged to complete American Red Cross First Aid preparation. When a pupil is asphyxiated, the mouth-to-mouth method of artificial respiration cannot be successful if used by someone who has merely read the directions from a textbook. Previous practice is essential, because the pupil's life depends on correctly administered artificial respiration. School personnel should be able correctly to control bleeding by digital pressure at designated pressure points throughout the body, by direct pressure, or by a tourniquet when the tourniquet is the last means of controlling bleeding. When a pupil has a broken leg, the pupil should be given American Red Cross First Aid for the simple or compound fracture until a physician arrives. The procedures involved in the first-aid care of fractures cannot be acquired from a textbook. These procedures, as well as all American Red Cross First Aid, must be practiced over a period of time until the first-aider can perform the procedures correctly. American Red Cross First Aid courses provide opportunities to practice, to acquire proper procedures, and to complete first aid for emergencies until the physician arrives. Among every six members of the school personnel, two members should have recent American Red Cross First Aid.

## PARENTS NOTIFIED

Following American Red Cross First Aid given to the ill or injured pupil, the teacher notifies the parents of the pupil's illness or injury. A telephone conversation is the usual means, and it should be informative but not dramatic. The recognizable signs of the illness or injury observed by the teacher, that American Red Cross First Aid has been given, and the need for medical care are mentioned. During the conversation, the teacher asks about the method of transportation—whether school personnel will take the pupil to his home or to the family physician, or whether the parent will come to the school and take the pupil home. The teacher should inform the parents that she will telephone them the next day to inquire about the pupil's condition.

## TRANSPORTATION OF THE PUPIL AND THE NURSE'S ROLE

Occasionally school personnel must transport the pupil to his home. A member of the instructional or administrative staff who has a free period at the time of the accident or injury may be assigned this task. A schedule can be used to designate teachers and administrative personnel free of assigned tasks at specific hours. If a secondary school youth is injured or becomes ill, he should be provided with some form of transportation from

school and not allowed to go home by himself. If a pupil is injured or becomes ill, the teacher should notify the school nurse. The nurse visits the pupil's home to check on parental care and to ascertain when the pupil will return to school. In secondary schools, the follow-through might be a telephone call rather than a home visit.

## EMERGENCY CARE RECORD

Another procedure by school personnel during emergency care is the recording of data on the emergency care record. This record should be made in duplicate as a minimum. When there is no school nurse, one copy is filed in the principal's office and the other copy in the teacher's desk. Where a school nurse is in attendance, an additional copy can be filed in her office. A sample emergency care record is found on page 124.

## FIRST-AID SUPPLIES

The last phase of the procedures for emergency care is concerned with first-aid supplies and their use. Lists of supplies can be found in the *American Red Cross First Aid Textbook*; they have also been developed by state departments of health, and given by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.

## SUMMARY OF PROCEDURES

In emergency care of an ill or injured pupil, these procedures might be included:

1. Procedures of emergency care of the ill or injured pupil should be known to all school personnel

### *For Illness*

- a. Be aware of the possible types of illness occurring to the pupil
- b. Recognize the signs of the particular illness
- c. Give appropriate ARC First Aid for the particular illness

### *For Injury*

- a. Be aware of the possible types of injuries occurring to the pupil
- b. Recognize the signs of the particular injury
- c. Give appropriate ARC First Aid for the particular injury

- 
- d. Notify the parent
  - e. Secure medical or hospital care if needed
  - f. Provide transportation so that the pupil can reach his home or family physician
  - g. Follow-through
  - h. Emergency care record

PUBLIC SCHOOLS

STATE

# EMERGENCY CARE RECORD

NAME OF STUDENT \_\_\_\_\_ AGE \_\_\_\_\_ SEX \_\_\_\_\_

HOME ADDRESS \_\_\_\_\_ PHONE \_\_\_\_\_

HOME ROOM TEACHER \_\_\_\_\_ GRADE \_\_\_\_\_

LOCATION AND TIME OF ACCIDENT OR ILLNESS \_\_\_\_\_

POSSIBLE CAUSE OF ILLNESS OR INJURY \_\_\_\_\_

DESCRIPTION OF ILLNESS \_\_\_\_\_

DESCRIPTION OF INJURY (PART OF BODY INJURED DEGREE OF INJURY) \_\_\_\_\_

FIRST AID RENDERED FOR THE ACCIDENT OR ILLNESS \_\_\_\_\_

ATTITUDE OF STUDENT AS TO TEMPORARY FIRST AID RENDERED \_\_\_\_\_

NOTIFICATION OF PARENTS \_\_\_\_\_ AT HOME \_\_\_\_\_ AT BUSINESS \_\_\_\_\_

TRANSPORTATION OF THE STUDENT TO HIS HOME? \_\_\_\_\_

TO HIS FAMILY PHYSICIAN? \_\_\_\_\_ TO A COOPERATING PHYSICIAN? \_\_\_\_\_

TO THE HOSPITAL? \_\_\_\_\_

HAVE THE PARENTS BEEN ENCOURAGED TO SEEK MEDICAL CARE? \_\_\_\_\_

HAS THE FOLLOW-THROUGH TAKEN PLACE? \_\_\_\_\_

DAYS LOST FROM SCHOOL \_\_\_\_\_ LENGTH OF RECOVERY PERIOD \_\_\_\_\_

COMMENTS UPON THE ACCIDENT OR ILLNESS \_\_\_\_\_

WITNESSES PRESENT:

NAME AND ADDRESS \_\_\_\_\_

NAME AND ADDRESS \_\_\_\_\_

YOUR SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

*Use other side of this record for additional comments*

2. Continuous evaluation of the effectiveness of these procedures is made by school personnel.
3. Revision of these procedures follows evaluation.

In order to inform the school personnel about specific procedures for emergency care, an "Emergency Care Handbook" should be developed by the school personnel. Specific procedures for a particular elementary school or high school should be considered so that the pupil will benefit from these emergency care procedures. Many of the procedures will involve details that need to be agreed on by all school personnel. An example of one of these details is the use of school personnel-owned automobiles for transporting a pupil to a physician or to his parent. These school personnel-owned automobiles might be covered by special insurance, which could be paid by the local board of education. The days, hours, and drivers of these automobiles available for emergency care purposes should be known to school personnel.

#### REFERENCES FOR FURTHER STUDY

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**PART II**

**HEALTHFUL SCHOOL LIVING**

## ENVIRONMENTAL FACTORS

School personnel and pupils have definite functions in maintaining a healthful and safe school environment. In this chapter, water supply, sewage and garbage disposal, heating and ventilation, light and color, school furniture, and safety will be considered.

## WATER SUPPLY

A school building utilizes water in many ways: to quench thirst, to prepare school noonday meals, to sanitize dishes and silverware, to clean corridors and toilet rooms, to launder towels, to prepare class materials, to bathe following physical education activities, and in countless other ways. In every instance, water must be purified and not polluted. Polluted water can be the source of such water-borne diseases as typhoid fever, bacillary dysentery, cholera, enteritis, and amebic dysentery. To provide a water supply free from pollution, the supply should be obtained from a public water system or from an individual or institutional-type water system.<sup>1</sup> The basic minimum supply of water in buildings fully equipped, with showers and kitchen facilities, is 25 gallons per pupil a day.<sup>2</sup>

The most common use of water in a school is for satisfying thirst. A minimum of one drinking fountain for each 100 pupils and one fountain on each floor is desirable.<sup>3</sup> The most satisfactory type of fountain does not allow the mouth of the student to come in contact with the nozzle and the waste water to fall on the nozzle. When drinking fountains are placed in the corridor, they should be recessed into the corridor wall. In most instances, angle-jet fountains have replaced vertical bubbler-type fountains.

As part of health instruction, teachers of the primary grades can show children how to use drinking fountains. The operation of the pressure-

<sup>1</sup> U.S. Department of Health, Education, and Welfare. *Environmental Engineering for the School*. (Public Health Service Publication No. 856). Washington, D.C.: The Department, 1961, pp. 42-43.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Ibid.*, p. 51.



control valve and the use of the angle-jet fountain can be part of a health lesson.

Hand washing facilities are often found outside the lunchroom. Hand washing before and after the noonday meal should be established early in the life of the elementary school child. To promote hand washing, the school should provide warm water, soap, and single-use paper towels.

The lunchroom must have water for the preparation of food and for dishwashing. Adjoining toilet rooms for food workers also utilize water. Hot and cold water with mixing faucets should be provided at all sinks and washbasins. To provide 180-degree water for dishwashing, special water heaters and storage tanks are usually required. Cooled drinking water, either from a drinking fountain or cooled-water unit, should be provided in the dining area.

In modern elementary schools, sinks and work counters are a part of the classroom facilities. Attached to the elementary school classrooms, for pupils of ages 5 to 7, are toilet rooms having toilets and washbasins. With available toilet rooms, hand washing and tooth brushing can be routine procedures for kindergarten and primary school children.

The physical education facilities need a water supply. This water supply furnishes the warm, tepid, and cool water for showering. Water supply must be available for swimming pools, outdoor playing surfaces, and cleaning purposes. In the shower room, the number of shower heads depends on the class enrollment of the girls' physical education classes and the boys' physical education classes during each of the shower periods. The gang or group type of shower is the preferred type. For girls, 10 percent of the showers should be individual showers with attached dressing cubicles. A minimum of one shower head for each four persons at the peak load is estimated as adequate. There should be at least 4 feet between shower heads. Group showers have individual and master controls. Individual controls are necessary in the showers with attached dressing cubicles.<sup>4</sup>

Disinfectants used in cleaning consume water supplies. Disinfection is the process of destroying pathogenic bacteria or other disease producing agents.<sup>5</sup> Lysol, hydrogen peroxide, and other disinfectants are used in a liquid state. Toilet facilities, shower and locker rooms, lunchroom, and all other surfaces needing disinfectants use water.

## SEWAGE AND GARBAGE DISPOSAL

The housefly and common house mouse will be found in elementary and secondary schools that have improper sewage and garbage disposal.

<sup>4</sup> National Facilities Conference. *Planning Facilities for Health, Physical Education, and Recreation* (rev. ed.). Chicago: Athletic Institute, 1956, p. 69.

<sup>5</sup> *Dorland's Illustrated Medical Dictionary* (23d ed.). Philadelphia: W. B. Saunders Company, 1957, p. 401.

The housefly can carry the causative agents of typhoid fever and other intestinal infections in addition to diseases caused by bacteria and some viruses. The common house mouse can be the reservoir for the infective agents of typhus fever, trichinosis, rat bite fever, and leptospirosis.<sup>6</sup>

Sewage includes the waste water from dish washing, washbasins, toilet facilities, showers, sinks, laundry, drinking fountains, and instructional equipment such as work counters. It includes surface drainage water and human body wastes. When there is improper sewage disposal, diseases such as typhoid fever, cholera, amebic and bacillary dysenteries, hookworm, and other intestinal infections may result.<sup>7</sup>

Waste is identified as wastepaper from classrooms, single-use paper towels, used drinking cups, scraps of metal and wood from shops, tin cans, bottles, used containers, chemical waste, and rubbish. A breeding place for flies and other insects is created when there is improperly disposed waste. Garbage includes the "... waste animal and vegetable material from kitchens. . . ."<sup>8</sup> Improper disposal of garbage becomes a breeding place for flies and other insects and feeds rats and stray animals.

Sewage should be discharged into a public sewer system or a private or institutional-type sewer system.<sup>9</sup> This latter system should be built according to the requirements of the state or local health department.

All waste should be placed in galvanized iron cans with tight-fitting covers, and should be separated from garbage. The waste receptacles placed in the toilet rooms, homemaking education rooms, shops, chemistry laboratories, art rooms, and lunchroom should be entirely covered with a swinging top that opens on pressure and swings shut when pressure is released. These receptacles should be large enough so that students cannot push them over and empty the contents. All receptacles should be emptied into galvanized iron cans with tight-fitting covers. In some communities, waste is collected by the municipality and chemically treated. School systems may have an outside incinerator where the waste is burned daily. Such an incinerator, brick-lined and screened over the opening, should not be accessible to stray animals and rodents.

Garbage should be placed in a galvanized iron can with a tight-fitting cover and separate from waste. A multiple-can system permits satisfactory disposal. There may be local health regulations for the methods of placing cans. These rules may insist that garbage cans be set on a well-drained platform within a screened area. Some types of garbage require wrapping. Garbage from a school building should be collected daily. Garbage cans should be cleaned, disinfected, and dried each time they are emptied. The

<sup>6</sup> Kenneth Maxcy, *Rosenau Preventive Medicine and Public Health* (8th ed.), New York: Appleton-Century-Crofts, Inc., 1956, p. 518.

<sup>7</sup> *Ibid.*, p. 1218.

<sup>8</sup> W. A. Newman Dorland, *The American Illustrated Medical Dictionary* (21st ed.), Philadelphia: W. B. Saunders Company, 1947, p. 571.

<sup>9</sup> U.S. Department of Health, Education, and Welfare, *op. cit.*, p. 44.

municipality usually collects the garbage, and several methods of disposal can be used: the Sanitary Fill, if properly constructed, is one method; another is incineration operated by the municipality.

As a part of health instruction in the intermediate elementary school grades and secondary school, there can be units from the area: community health. These units might be purified and polluted drinking water, sewage treatment, garbage and waste disposal, insect-borne diseases, and control of rat-borne diseases. Subject matter should be adapted to pupil health needs and grade level.

## HEATING AND VENTILATION

Fatigue signs appearing in students in the midmorning and midafternoon may be caused by the inefficiency of the heating system and air distribution or the failure of the teacher to check room temperature and to provide adequate air movement and fresh air. The teacher may feel comfortable and have a sense of well-being. The students may be too warm or cold, seated in a draft, or nauseated from classroom odors. The students, through their activities, may be overheated. Teachers should understand the importance of proper heating and air distribution in all phases of instruction so that the students will not become fatigued or ill.

Classroom temperatures cover a narrow range of dry-bulb temperature. During the heating season and winter months, the classroom temperature should be 68 to 74 degrees F. Lower temperature is desirable when students are moderately active. Students who are less active will be more comfortable when a higher temperature is available. The recommended temperature for gymnasiums is 65 degrees F. or slightly lower. Elementary school children prefer a temperature of 70 degrees F. because their metabolic rate is higher than that of adults.<sup>10</sup> The National Facilities Conference suggests 80 degrees for shower and locker rooms, and 83 degrees F. for the swimming-pool area.<sup>11</sup> The temperature of the swimming-pool area should be 5 degrees warmer than the temperature of the water.

Children at the elementary school level can participate in checking the room temperature, keeping hourly and daily charts, comparing room temperatures during the winter and spring seasons, and helping the teacher to maintain constant room temperatures. These pupil activities can be a part of the health instruction.

Fresh outdoor air is introduced into the air system of a school building so that (1) a basic minimum quantity of air in cubic feet is provided per person and (2) body odors are removed. Not less than 15 cubic feet per minute per person of fresh air should be supplied in a room where students are doing light activity. The amount of fresh air per person per

<sup>10</sup> *Ibid.*, p. 36.

<sup>11</sup> National Facilities Conference, *op. cit.*, p. 130.

minute should be raised to 20 cubic feet as the activity increases. The required rate of air exchange will range from 10 to 30 cubic feet per minute per person.

Air delivered to classrooms should have drafts eliminated or drafts kept to a minimum. Radiant heating systems distribute heated air by convection currents, which have draft-free operation. Hot-air heating may cause the air to become extremely dry. Humidifiers should be provided so that a minimum relative humidity of 45 percent can be maintained.

The heat control, or thermostat, adjusts the dry-bulb temperature of classrooms and other school areas. The thermostat should be placed in the coolest part of the room or at a point farthest from the source of heat. Some room thermostats require little attention. Students should not attempt to adjust the thermostats.<sup>12</sup>

All heating and ventilating units should be recessed into wall space or, when exposed, covered with a metal shield. In the physical education facilities, the safety of participants, spectators, and school personnel can be safeguarded by recessed units.

Air conditioning can provide greater physical comfort and health protection in school buildings located in extremely high temperatures, in areas with numerous pollutants in the air, and in school systems operating an 11-month school year. The primary purpose of air conditioning is temperature control. The air is filtered and washed to remove obnoxious gases, dust, pollen, and smoke. During the winter, the temperature is maintained from 68 to 74 degrees F. From early spring through September, the temperature may be slightly lower. Humidity ranges from 40 to 45 percent during winter months and from 45 to 50 percent during hot weather.

## LIGHT AND COLOR

A high quality of lighting and an adequate level of illumination are necessary for efficient performance of visual tasks. At the various elementary and secondary school grade levels, the visual tasks are numerous. Such tasks vary in direction, viewing distance from the eye, size, time of viewing the visual tasks, brightness difference, and the like.

Several variables must be considered when visibility of school tasks is to be determined: contrast, brightness level, size, time, and quality of the lighting. In *contrast*, the total task is the page of the book. The task detail includes the printing on the page viewed against the page of the book. Contrast of the task detail should be at a *maximum*, whereas contrast of the total task should be at a *minimum*. As to *brightness level*, the brightness of the task should be equal or slightly greater than the

<sup>12</sup> U.S. Department of Health, Education, and Welfare, *op. cit.*, pp. 36-39.

brightnesses of the entire visual environment under optimum conditions. For visual comfort and efficiency, the brightness of surfaces immediately adjacent to the visual task is more important than that of remote surfaces in the visual background. As for *size* of the task detail, the larger the task detail, within a given range, the easier and more accurate is the reading. Limitations are placed on the *time* for performing any seeing task. In the art of rapid and accurate reading, the seeing task is not to be overlooked. In seeing, the eye moves, pauses, picks up what is seen, transmits the information to the brain, and moves on again. If the object to be seen is available for  $\frac{1}{4}$  of a second, the eye works at the rate of five assimilations per second, if one object is gained per pause.

*Quality of illumination* depends on reflectances and glare. Desk tops and other furniture, floors, chalkboards, walls, and ceilings will be considered in the discussion of reflectances. *Desk tops* and other furniture should fall within the range of 35- to 50-percent reflectance. Distracting reflections on desk tops can be avoided when the desk tops are nonglossy. Natural-finished light wood *floors* and light-colored floor materials may produce reflectance up to 50 percent. *Chalkboards* should be light enough to blend well with the background and dark enough to afford adequate contrast to chalk writing. Colored chalkboards should not exceed 20-percent reflectance, but black used chalkboards should have 5- to 10-percent reflectance. *Walls* should reach a median of 50-percent reflectance. A 40- to 60-percent range allows a wide choice of pastel colors on the walls. *Ceilings* should have 70- to 90-percent reflectance, with a nonglossy or flat finish. High reflectance assures good utilization of light. Most white painted ceilings, with no acoustical materials, measure as high as 90-percent reflectance.

*Glare* is unwanted brightness causing discomfort, distraction, and reduction in visibility. Two classifications of glare are discussed: direct and reflected glare. *Direct glare* is related to conditions in the visual area directly associated with the source of light and its immediate environment. Windows and luminaires (complete lighting unit with all its appurtenances) are two common sources of direct glare. The degree of direct glare is governed by the angular displacement, visual size of source, brightness of source, and adaptation brightness. In angular displacement, a glare source close to the line of vision is more distracting than a glare source above the head. In visual size of source, large brightness areas are more distracting than small areas. As for the brightness of the source, there is more glare as the source becomes brighter. In adaptation brightness, on the other hand, the glare effect from light sources is decreased as the environmental level of brightness is increased. *Reflected glare* is related to conditions associated with the visual tasks and their immediate environment. Reflected light is used for most visual tasks. Glossy backgrounds can produce losses in contrast caused by reflected glare. These

losses may be reduced by altering the light distribution. In this manner, more light comes to the task from outside the zone of reflected glare. Also, these losses may be reduced by spreading the downward light over a larger area or by increasing the illumination level.

Research reveals that the brightness of the task increases visual performance, but the quantity of illumination needed for efficient, accurate seeing varies far more than expected. Sixty-four percent of the student's total time is spent on such tasks as writing with pencil, reading, and working with duplicated materials.<sup>13</sup> These tasks require from 60 to 100 footcandles. (Footcandle is a unit of illumination produced at a surface equivalent of 1 foot from a uniform point source of one candle.<sup>14</sup> Because many different tasks are being performed at the same time in a classroom, it would be impractical to provide a quantity of light on the basis of one given task. Also, the entire classroom must be provided with a satisfactory minimum level of illumination. Thus a general lighting level for a classroom is difficult to ascertain.<sup>15</sup> In addition, certain classrooms, such as shops, sewing and art rooms, gymnasiums, and classrooms for children with physical disabilities, need special levels of illumination. The Illuminating Engineering Society recommends the following procedures to improve seeing: <sup>16</sup>

1. Low-gloss ink rather than pencils and ball-point pens
2. Low-gloss ink, adequate spacing between lines of type, and minimum type size of 10-point Bodoni in textbooks
3. Matte paper for both working paper and printed materials
4. Good degree of opaqueness and high reflectance in paper
5. Proper combination of illumination, chalk, and chalkboards with supplementary lighting for chalkboards
6. Good quality duplicated materials

Light sources currently available for classrooms are daylight, incandescent, and fluorescent. There is a trend to avoid introducing direct sunlight into a classroom. The arrangement of windows, overhanging roofs, placement of trees and bushes, and louvers or other shielding devices prevent direct sunlight from entering a classroom.

Electric lighting systems can be divided into five classifications: indirect, semi-indirect, general diffuse, semi-direct, and direct. *Indirect* lighting systems send from 90 to 100 percent of the light from luminaires to the ceiling and the upper part of the walls. Matte high-reflectance room

<sup>13</sup> *American Standard Guide for School Lighting*. New York: Illuminating Engineering Society, 1962, pp. 8-18.

<sup>14</sup> Committee on Office Lighting of the Illuminating Engineering Society. *Recommended Practice for Office Lighting*. New York: Illuminating Engineering Society, 1956, p. 28.

<sup>15</sup> *American Standard Guide for School Lighting*, p. 17.

<sup>16</sup> *Ibid.*

surface finishes are essential. Indirect lighting systems produce minimum shadows. *Semi-indirect* lighting systems send from 60 to 90 percent of the light from the luminaire to the ceiling and the top of the walls. Light not sent to the ceilings and upper walls is directed downward. There are low brightness ratios between the ceiling and luminaire when luminous surfaces are used with semi-indirect units. Direct or reflected glare may result because the amount of light directed to the floor is greater. *General diffuse* lighting systems send about the same percentage of light upward as downward. These luminaires direct light equally in all directions. Shadows may be more noticeable. Direct and reflected glare may result. *Semi-direct* lighting systems send from 60 to 90 percent of light toward the work surface. There is a reduction of the brightness ratio between the luminaire and the ceiling. Shadows and reflected glare result. Large areas light sources minimize shadows and reflected glare. High reflectances and matte finishes on furniture and equipment reduce reflected glare. *Direct* lighting systems send from 90 to 100 percent of the light downward. Disturbing shadows and reflected glare may be produced. High-reflectance room and furniture surfaces redirect light to the ceiling.

No one electric lighting system can be recommended because each system has characteristics that may be needed in different teaching environments. Combinations of two or more of these electric systems in the same classroom have been used.<sup>17</sup>

## PROMOTION OF EYE HEALTH

In utilizing classroom light to promote the students' eye health, a teacher should:

1. Never seat a student with a bright window area in his direct field of vision
2. Keep the upper portion of windows unshaded except when the sun shines on the window surfaces
3. Make special seating arrangements for left-handed students
4. Keep window sills free from all objects
5. Not paste pictures on window panes
6. Use multiple seating arrangements
7. Check to be sure that no student works in his shadow
8. Check the conditions of all shades so that
  - a. Daylight does not enter at the mid-point or at the sides of the shades
  - b. No cracks or tears are found in translucent shades
9. Eliminate from the classroom all wall charts and maps that have become faded, dirty, or worn

<sup>17</sup> *Ibid.*, pp. 18-19.

10. Report and have replaced all defective incandescent and fluorescent tubes
11. Report and have cleaned dirty luminaires of incandescent or fluorescent artificial lighting
12. Report and have cleaned dirty unwashed window glass
13. Keep chalkboards clean and free from accumulating chalk dust
14. Stand or sit in positions directing students' vision away from the windows
15. Check the illumination levels periodically in all parts of the room
16. Provide copyholders and easels for vertical-plane desks to maintain optimum lighting for close eye tasks
17. Make all board writing clear, large, and consistent
18. Plan the daily school program so that close visual tasks alternate with activities requiring a lesser degree of visual concentration
19. Use artificial light to supplement daylight when brightness levels fall below standard in any part of the room
20. Place students with visual difficulties in classroom positions that give them the best light in accordance with their individual visual difficulties
21. Allow students to change their seats when they desire more or less light
22. Provide library areas of classrooms with ample brightness levels
23. Check to be sure that pictures, cabinets, bookshelves, tables, and other room surfaces have been treated with nonglossy finishes
24. See that shrubbery and trees in the vicinity of classroom windows are trimmed to permit entrance of a maximum of natural light
25. Cover chalkboards not in use
26. Cover glass surfaces in cabinets, and remove glass covers on pictures
27. Select and use teaching aids having nonglossy surfaces
28. Select student textbooks and supplementary reading materials having appropriate type size, nonglossy surfaces, and desirable contrasts
29. Be aware of glare on black slateboard surfaces
30. Be alert to blackened lamps or tubes previous to disposal
31. Be aware of slate blackboards becoming gray and semipolished
32. Use high-grade white chalk, with a minimum of clay filler
33. Check the condition of all painted surfaces for the accumulation of dirt, particularly the ceiling, side walls, and front walls
34. Check the condition of desk tops so that the blond color is retained and not replaced by dirt, pencil marks, or paints used in class activities
35. Maintain high levels of artificial illumination in art and drafting rooms, homemaking education laboratories, science and music rooms, special education rooms, and libraries
36. Remove all curtains and all window decorations
37. Check height of desk-chair combinations so that the student receives the optimum light on the working surfaces



38. Develop in students a sense of responsibility for maintenance of good eye health
39. Stress the importance of proper illumination in home study as a part of health instruction
40. Participate in in-service education promoting good eye health
41. Stress the importance of good sitting posture during reading, writing, drawing, or other desk-top activities

## SCHOOL FURNITURE

Many types of school furniture are utilized in various parts of a school building. Desk-chair combinations may be found in classrooms. School libraries use tables and chairs. Auditorium seating differs from dressing or locker room benches. Furniture of special education classrooms has adjustments seldom found in lunchroom or cafeteria seating. The size of furniture for an elementary school classroom is considerably different from that of furniture for a high school classroom.

School furniture should have a variety of designs and sizes, be movable, and be adjustable. No single designed piece of school furniture is applicable to every teaching environment. Nor can desk-chair combinations of the same size be used at all grade levels.

Desk-chair combinations should be movable. Noiseless gliders placed on the legs or supports of the combination will permit movement with the minimum of noise. Manufacturers of today's classroom furniture are using blond, straw, and other light-colored finishes on the desk-chair combination, and light-weight construction materials that a first-grader can push or an older child lift. Thus students can push the desk-chair combination into different seating arrangements to improve the quality of light on the working surface.

The adjustment of the desk-chair combination to the growth of the child is of paramount importance. For a long time educators have overlooked both the importance of posture and body mechanics as an essential part of the learning process, and the fact that the process of learning is physical as well as psychological. Eyestrain and body fatigue not only result in headache, irritability, and listlessness but also retard learning. A common fault of school personnel is purchasing nonadjustable desk-chair combinations in one size for each grade level. Varying sizes of desk-chair combinations should be used for every grade level. Numerous studies have shown that a large percentage of the traditional desk-chair combinations is oversized.

## COMMON FAULTS IN SITTING POSTURE

Before the classroom teacher can adjust the desk-chair combination to the child's growth, she should be able to identify common postural faults

in the pupils' sitting positions. A child who does the following illustrates some of these faults:

1. Sits in a slumped position. The chair is too small for him.
2. Has pressure under his knees. The chair seat is too deep from front to back; thus the front edge of the seat puts pressure under the child's knees.
3. Cannot touch the floor with the entire foot. The chair seat is too high.
4. Hunches over in poor posture. The chair is too small, and the desk top or chair arm is too low and too flat.
5. Overflows the chair. The chair is too small.
6. Leans to one side. The desk top or chair arm is too high.
7. Stretches his trunk muscles. The desk top is too high and does not have the correct slant for work.
8. Hunches over desk. The desk top is too low and too far away.
9. Sits on one foot. The desk top is too high.

These common postural faults may lead to scoliosis, kyphosis, forward head, and many other postural deviations.

#### GUIDES FOR THE TEACHER

No two children have the same rate of body growth, and there are individual differences in sitting postures. At the beginning of the school year, the classroom teacher should allow each child to select an individual desk-chair combination. Following the selection, the teacher should tell the children that adjustments will be made in their desk-chair combinations so that they can be seated comfortably. Once the adjustments are made, each child keeps his own desk-chair combination. To be seated with acceptable posture, the child should be comfortable and avoid eyestrain and body fatigue. The child is *not* seated in an overtense, arched-back position, with his hips pushed back into the chair.

1. The seat must be low enough so that the child's feet can be placed flat on the floor and all pressure at the knees relieved.
2. There should be approximately the width of two or three fingers between the front edge of the seat and the calf, or the angle of the knee.
3. The height of the desk should be at the level of the elbows as the child sits in good posture at his desk.
4. The space between the underneath part of the desk and the child's knees must be adequate for comfort.
5. The space between the child's body and the top edge of the desk should be just the width of his hand.
6. Chair backs should support the small of the back at all times if the child is to maintain good sitting posture.
7. There should be a slight sloping downward from the front edge of the seat toward the back edge.



Figure 10

"Arrow 1 indicates where front edge of seat is putting pressure under the knees. The chair seat is too deep from front to back. Second arrow indicates that the chair is too high." By permission from the Texas State Department of Health.



Figure 11

"In this position, the child is leaning to one side and thus throwing the back into a lateral curvature of the spine. The arm of the chair is too high for this child." By permission from the Texas State Department of Health.

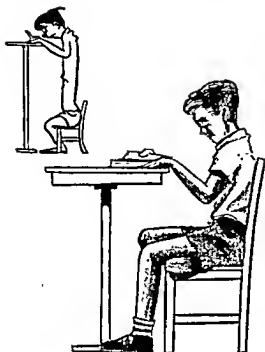


Figure 12

"Very poor posture for study. No slant downward from front to back in the seat of the chair—the child feels as though he is slipping out of the chair. Desk is too far away and does not have correct slant for work. The most evident fault is that desk is too high." By permission from the Texas State Department of Health.

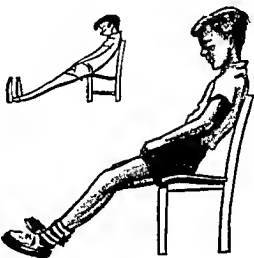


Figure 13

"Illustration of child sitting in slumped position in school chair. This chair is too small. This position if continued through most of the day could cause the development of round shoulders and forward head with hollow back." By permission from the Texas State Department of Health.

Desk-chair combinations should be checked every 3 months by the classroom teacher and necessary adjustments should be made. In intermediate grades, children can learn to make these adjustments as part of a health lesson on posture and body mechanics. Desk-chair combinations should be checked regularly in the primary grades because of children's rapid body growth.

In schools where students change rooms and seats throughout the day, or in classrooms where traditional furniture is used, students should be made aware of the different sizes of seats and different heights of desks in each room. Students should be aware of criteria in selection of desk-seat, tablet-arm chair, table-chair, or other combinations of school furniture. These criteria have been given under "Guides for the Teacher." In classrooms having tablet-arm chairs, a few left-handed tablet-arm chairs should be provided.

## SAFETY

As old schools are being relocated and new schools are being built, many safety factors need to be considered. Some of these safety factors are procedures promoting accident prevention in the school environment, school pedestrian safety patrols, school bus safety and patrols, traffic control on school grounds, bicycle safety patrols, and fire and disaster drills. Procedures promoting accident prevention need to include all classrooms, corridors and stairs, laboratories, special classrooms, shops, physical education facilities, auditoriums, and lunchrooms. Elementary schools and junior high schools should have school pedestrian safety patrols at street crossings within one block of the school. The safety patrols need to be organized by principals who realize the necessity of school bus safety patrols, traffic control on school grounds, bicycle safety patrols, and fire and disaster drills.

## FIRE DRILLS

A school principal must realize the possibility of fire in the building. He may delegate the responsibility of planning fire drills to another member of the faculty, but all procedures must have the approval of the school principal. Before any planning is attempted, the principal must be familiar with all hazards within the building that may cause fire. These hazards should be eliminated as quickly as possible. However, procedures to follow in the event of a school fire must be planned. These procedures will involve:

1. Mapping regular and alternate routes of evacuation from every classroom, auditorium, library, health service unit, lunchroom,

corridor and stairway, toilet and teachers' rooms, administrative offices, shops, laboratories, special classrooms, and physical education facilities to areas adjoining the school. All school personnel and pupils must be included. All situations of the school day must be considered. Evacuation of students who are in the shops, auditorium, lunchroom, and locker and shower rooms must be considered.

2. Placing fire direction signs for evacuation in each classroom, auditorium, library, health service unit, lunchroom, corridor and stairway, administrative offices, toilet and teachers' rooms, shops, laboratories, special classrooms, and entire physical education facilities.
3. Establishing first-aid centers, with proper first-aid supplies, off the school grounds with the school nurse or a faculty member in charge. Students in secondary school health education classes who have had the American Red Cross Standard First Aid course can assist the person in charge of this center. Each student should have designated first-aid duties. Injuries of the most serious nature should be treated first.
4. Including procedures for congested and overcrowded classrooms, auditoriums, lunchrooms, and physical education facilities.
5. Working out plans for bringing to the school:
  - a. Fire-fighting equipment
  - b. Police protection
  - c. Community medical and nursing personnel
  - d. Ambulance service
6. Establishing fire signals that differ from disaster signals and checking to be sure that signals can be heard throughout the entire school.
7. Giving in-service education to school personnel concerning:
  - a. Use of school fire-alarm boxes
  - b. Methods of reporting fires within the school
  - c. Recognizing fire signals for fire drills
  - d. Evacuation routes for each teacher and her class
  - e. Teacher and school personnel's responsibilities in:
    - (1) Informing students at the beginning of each semester of the fire direction signs for that particular class or school activity
    - (2) Appointing student leaders to assist teachers
    - (3) Informing students to leave coats, books, and personal effects in the classroom from which they are being evacuated
    - (4) Checking to be certain that all students leave the class by the designated routes in single file
    - (5) Being calm, not hurried, and avoiding panic
    - (6) Being the last person to leave the class

- (7) Realizing that some students may go to the first-aid center to assist in first-aid treatment
  - (8) Reporting to the principal on arrival at the evacuation spot that all students and teacher are safe
  - (9) Reporting serious and minor injuries, burns, and asphyxiation resulting from fire and evacuation
8. Informing students through teachers of their responsibilities during a fire:
    - a. Recognizing the fire signal for fire drill
    - b. Reading fire direction signs in each part of the school facilities
    - c. Assisting teachers
    - d. Leaving coats, books, and personal effects in classroom
    - e. Leaving the particular class in a single file, not pushing, not shoving, walking quietly, walking in areas close to the building walls, and going directly to evacuation spot
    - f. Realizing that some students will be assisting at the first-aid station
    - g. Standing quietly at evacuation spot while the teacher checks class roll
  9. Informing parents, through bulletins, of school procedures during the fire and explaining to them about:
    - a. Avoiding telephone calls to school
    - b. Parking cars in designated areas so that the school building is accessible to fire-fighting equipment, physicians, nurses, and ambulance
    - c. Bringing coats and blankets and assisting teachers who have evacuated students from the building
  10. Establishing identification for each student and school personnel so that all persons can be quickly checked at evacuation spots.
  11. Preparing school personnel in American Red Cross First Aid. At least two of every six school personnel should have had recent training in American Red Cross First Aid.
  12. Having school personnel and students practice fire drills intermittently during the school year at hours and days differing from previously practiced drills.
  13. Supervising the entire fire drill.
  14. Evaluating each fire drill to be familiar with procedures needing revision, addition, or elimination.
  15. Informing school personnel and students of changes in procedures of fire drills and being certain that all personnel and students clearly understand the changes.
  16. Practicing fire drills with the changed procedures.
  17. Obtaining school personnel and students' opinions on means of improving fire drills.

## SELF-PRESERVATION IN THE EVENT OF DISASTER

Procedures in the event of disaster will need the cooperative planning of a school administrative official with civil defense officials of the local community. There are two types of disaster: natural and man-made. Natural disasters include tornadoes, floods, dust storms, hurricanes, earthquakes, blizzards, and other disasters that are caused by the forces within nature. Man-made disasters include thermonuclear bombings, aerial bombings, explosions, bacteriological warfare, and poisonous gases expelled by man into the atmosphere. The procedures that might protect the lives of students and school personnel include:

1. Mapping *regular* and *alternate* routes of evacuation to dispersal and shelter areas. In some disasters, students and school personnel will remain within areas of the school building, such as corridors. In other disasters, students and school personnel will be evacuated from the school building. The construction of the school building and its corridors will determine the evacuation. Civil defense officials should be consulted to discover whether complete or partial evacuation of school buildings is necessary. All classrooms, auditoriums, library, health service unit, lunchroom, corridors and stairways, administrative offices, special classrooms, shops, laboratories, and physical education facilities should be included on these routes. All pupils, school personnel, and situations must be considered.
2. Planning for identification of each student and member of the school personnel, including name and address of the nearest of kin to notify, and the blood type.
3. Placing direction signs for procedures during disaster in each classroom, auditorium, library, health service unit, lunchroom, corridor and stairway, administrative suite, toilet and teachers' rooms, shops, special classrooms, and physical education facilities.
4. Preparing school personnel in American Red Cross First Aid and in the procedures for first aid during all types of disasters.
5. Appointing school personnel who are American Red Cross first-aiders to different first-aid centers.
6. Establishing first-aid centers according to civil defense plans within the school building and at shelter areas. Students in secondary school health education classes who have had the American Red Cross Standard First Aid course can assist at the first-aid center. Procedures should be established for:
  - a. Classification of victims as it affects first aid: casualties needing immediate lifesaving first aid, casualties for which speed is important but not as urgent as for the first group, and those having serious injuries but who can wait until the first two groups are treated



- b. Types of injuries, burns, wounds, internal injuries, blast injuries, fractures, injuries caused by crushing, asphyxia and difficulty in breathing, eye injuries, and radiation sickness.
  - c. Labeling of casualties
7. Including procedures for congested and overcrowded classrooms, auditorium, lunchrooms, and physical education facilities.
  8. Coordinating all school procedures with civil defense plans.
  9. Establishing school practice disaster signals that differ from fire signals but correspond to community disaster signals.
  10. Giving in-service education to all faculty and school personnel regarding:
    - a. Community disaster signals
    - b. School practice disaster signals
    - c. Procedures for each teacher and his class to follow when practice disaster signals occur
    - d. Teacher and school personnel's responsibilities in:
      - (1) Informing students at the beginning of each semester about routes and procedures for that particular class or building area
      - (2) Appointing student leaders to assist teachers
      - (3) Instructing students to leave coats, books, and personal effects in the building
      - (4) Checking to be certain that all students leave the particular building area and proceed to designated shelter areas
      - (5) Being calm and unhurried, and avoiding panic
      - (6) Being the last person to leave the particular building area
      - (7) Reporting to principal on arrival at the shelter area so that all students and teacher are known to be safe
      - (8) Reporting serious injuries, burns, asphyxiation, sickness, and wounds from disaster
  11. Informing students through teachers of their responsibilities during disaster:

14. Establishing procedures for children not reaching their homes during an "alert" of community disaster.
15. Coordinating school procedures with community centers for victims of disaster.
16. Giving in-service education to school personnel in self-preservation during a disaster so that school personnel can pass the information and procedures along to pupils and parents:
  - a. At home, as in the prevention of flying glass; turning off electricity, gas, water outlets; avoidance of food contamination and polluted water; disposal of garbage and sewage; self-preservation procedures from falling building structures, fires, and explosions; and care of small children and old persons
  - b. On the street
  - c. In a car, bus, or train
  - d. In some other building not a home or school
17. Having school personnel and students practice disaster drills at hours and days differing from previous disaster practice drills.
18. Supervising entire disaster practice drill.
19. Evaluating each drill in the presence of civil defense officials to be familiar with procedures needing revision, addition, or elimination.
20. Informing school personnel and students of changes in procedures of disaster practice drills and being certain that all personnel and students clearly understand the changes.
21. Practicing disaster drills using the changed procedures.
22. Obtaining school personnel's and students' opinions on means of improving disaster drills.

These fire and disaster procedures may vary, depending on community, school, and civil defense planning. A wise school superintendent and alert principals will have fire and disaster procedures and will practice these procedures regularly, because the lives of pupils and school personnel are involved.

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## SCHOOL NUTRITION

*In 1946, the 79th Congress approved Public Law 396—the National School Lunch Act. Previous to and since the enactment of this act, there have been considerable interest and support by school and community personnel in school nutrition. Studies of the effects of the school-prepared noon day meal and of the school-provided supplementary feeding have revealed that school nutrition can greatly benefit the nutritional status of elementary and secondary pupils.*

## NUTRITION RESEARCH

In order to improve the nutritional status of our elementary and secondary students, numerous investigations have compiled data showing the need for school nutrition. Several of these studies will be discussed.

Mack and Bowes obtained data from medical-nutrition observations and tests and observations of body functions and body chemistry of 1268 girls and 1268 boys ages 12 through 20. These tests and observations were compared to food records for one week of these 2536 boys and girls.

In the following data, the percentages of all girls and boys who fulfilled the recommended requirements for calories and nutrients, for their sex-age levels, are given.

	Girls (percentages)	Boys (percentages)
Calories	32.9	22.9
Protein	47.4	56.8
Iron	25.7	50.6
Calcium	29.1	48.9
Thiamine	29.6	28.2
Niacin	52.7	38.3
Vitamin C	52.4	50.3

From the above information, it is apparent that 43 or more percent of these 2536 girls and boys were *not* consuming the recommended amounts of calories and nutrients.

Medical-nutrition observations were performed by physicians, dentists, nutritionists, and technologists. Anthropometric measurements, dental evaluations, medical and bimicroscopic examinations, laboratory tests of blood and urine, and observations of heart functioning and resistance to fatigue were included among many other clinical observations and tests. In the following data, girls are compared with boys for unfavorable findings of clinical observations and tests.

	Girls (percentages)	Boys (percentages)
Weight for the sex, age, body size, and body build	18.9	19.5
	8.5	8.8
Skeletal deformities and misproportions	37.6	32.4
Dental caries	99.4	99.1
Deviations from norm in heart functions according to electrocardiogram	58.9	57.7
Slight to marked fatigue according to medical examiner	51.7	72.4

Lesions of the gums, lesions of the tongue, failure in growth, skin lesions such as acne, nervousness, low red cell count and hemoglobin levels, and inadequate or excessive subcutaneous tissue were among other unfavorable findings of clinical observations and tests.<sup>1</sup>

Morgan's investigations of family food consumption, individual dietary records, results of biochemical tests, anthropometric measurements, and medical specialists' examinations showed that the credibility of evidence of an individual's nutritional status is based on laboratory data. Even though family food consumption and dietary records can be useful indicators of an individual's nutritional status, such indicators cannot be the sole basis for determining nutritional status. In 3-day dietary records of elementary school children, the children reported that they had consumed about 55 percent of the calories, 70 percent of the protein and iron, 70 percent of the vitamins, and from 90 to 100 percent of the calcium recommended. These dietary records were compared with laboratory evidence. Low hemoglobin levels, inadequate protein and iron intake, low serum ascorbic acid levels, and too little blood carotene were revealed. Thus laboratory evidence did not agree with the reported 3-day dietary records of elementary school children.<sup>2</sup>

Larsen has reported a study of food patterns of 247 adolescents. Boys ate more food than girls did. All boys and girls needed more milk, fruits,

vegetables, and cheese. Girls consumed insufficient quantities of eggs and whole-grain cereals. These adolescents disliked liver, asparagus, cabbage, spinach, cauliflower, cottage cheese, and turnips. Vitamin C is found in cabbage; protein is found in cottage cheese and liver.<sup>3</sup>

A pilot study of dietary practices of teenage girls has revealed that obesity was a considerable problem and that many of the girls desired that nutrition education be directed toward weight control. Also, the study revealed that, in order to improve the teenage girls' dietary practices, parents must be taught more about nutrition. Milk was reported as a favorite after-school snack. These teenage girls agreed that most teenagers do not observe correct dietary habits.<sup>4</sup>

In a dietary study of 1319 junior high school students, two of five students were severely underweight or overweight. Ninety-one percent of all students ate breakfast every day. The underweight and overweight students omitted breakfast more frequently than did other students. All students fell below recommended daily dietary caloric allowances, and their protein intake was low. The study was made over a 1-year period with a recheck within 2 years.<sup>5</sup>

Findings of national surveys reveal some of the reasons why children and adults skip breakfast. Some women set poor examples for their children by not eating breakfast; some believe that breakfast is not necessary in the woman's daily diet. Fear of overweight, too, frequently leads to omission of breakfast; and eating alone, eating in a hurry, sleeping poorly, and other circumstances sometimes cause people to skip breakfast. In fact, good nutritional practices for breakfast are not known. Some boys and girls are not hungry at breakfast: 25 percent of the boys and 33 percent of the girls. Many boys and girls do not take time to eat breakfast. For these reasons, four of every five children go to school with an inadequate breakfast, and one half of the adult population skips or skimps breakfast.<sup>6</sup>

The Iowa Breakfast studies carried out over a period of 10 years, drew the following conclusions, among others, about the dangers of omitting breakfast:<sup>7</sup>

1. Decreased efficiency occurs in late morning hours. Reactions are slower. The person tires easily.
2. Poorer attitudes toward school work and fewer possibilities of scholastic attainments are evident.

<sup>3</sup> Virginia Larsen. "Research on Adolescent Nutrition." *Journal of School Health*, 32:56 (February 1962).

<sup>4</sup> M. C. Hampton, L. R. Shapiro, and R. L. Huenemann. "Helping Teen-Age Girls Improve Their Diets. Report of a Pilot Study." *Journal of Home Economics*, 53:835 (December 1961).

<sup>5</sup> *Food and Nutrition News*, 31:2 (January 1960).

<sup>6</sup> Cereal Institute. *Breakfast Source Book*. Chicago: The Institute, 1961, pp. 4-5.

<sup>7</sup> Cereal Institute. *A Complete Summary of the Iowa Breakfast Studies*. Chicago: The Institute, 1962, pp. 57-59.

3. Work output is less. Mental reactions are slower. Muscular fatigue increases.
4. Hunger is accentuated, thus providing a disadvantage in a weight reduction diet.
5. One fourth of the daily caloric requirement and one fourth of the daily protein allowance are not met.
6. The "coffee break" is not an efficient substitute for an adequate breakfast.

To emphasize the role of the teacher in school nutrition, a research study was conducted in the Kansas City (Missouri) Public School System. The study revealed how teachers can influence food habits of sixth- and seventh-grade boys and girls. Five schools were selected in the study, with three designated as research schools and two as control schools. Research schools were given the nutrition education. Sixth-graders participated in the study for 2 years, and seventh-graders for 1 year. During the third year, the effectiveness of nutrition education was evaluated. Parents in the research schools understood their roles in the study. Ten protective food groups were used to appraise the food habits of boys and girls. Milk, eggs, noncitrus fruits, citrus fruits, lean meat, whole-grain and enriched products, butter and fortified margarine, Irish and sweet potatoes, green leafy vegetables, and other vegetables were included in the food groups. Before the study, both groups of children fell below the Recommended Daily Dietary Allowances in milk, eggs, citrus fruit, butter and fortified margarine, Irish and sweet potatoes, and green leafy vegetables. The nutrition education in the research schools depended on the teacher. The study indicated the following results: \*

1. At the end of the second year, boys and girls participating in nutrition education had met or surpassed the Recommended Daily Dietary Allowances in six food groups. Boys and girls not having nutrition education met and surpassed the recommended standards in two food groups.
2. Some gain was made in the dietary allowances for green leafy vegetables by both research and control groups.
3. Boys and girls who had received nutrition education scored higher in the Ohio Education and Hygiene Test than did the boys and girls not having nutrition education.

#### ESSENTIAL FOUR

In 1958, the nutritionists of the Institute of Home Economics, United States Department of Agriculture, developed a quick, dependable guide to daily food selection. The four food groups are: \*

\*Pattie Ruth O'Keefe. "Research in Action." *Journal of School Health*, 26:58 (February 1956).

\*U.S. Department of Agriculture. *Food for Fitness: A Daily Food Guide* (Leaflet #424). Washington, D.C.: Government Printing Office, 1958.

*Meat group:* Two or more servings beef, veal, pork, lamb, poultry, fish, eggs. As alternates: dried beans, peas, and nuts.

*Milk group:* Children, three or four cups. Teenagers, four or more cups. Adults, two or more cups.

*Bread and cereals group:* Four or more servings. Whole grain, enriched, or restored.

*Vegetable and fruit group:* Four or more servings. A citrus fruit or other fruit or vegetable important for Vitamin C, each day. A dark-green or deep-yellow vegetable for Vitamin A—at least every other day. Other vegetables and fruits, including potatoes.

## RECOMMENDED DAILY DIETARY ALLOWANCES

The Food and Nutrition Board of the National Research Council has indicated the amounts of calories, protein, calcium, iron, Vitamin A, thiamine, riboflavin, niacin, ascorbic acid, and Vitamin D for children, boys and girls, and men and women.<sup>10</sup> These amounts are given in the table on page 154.

## FAT CHILD

Obesity is the result of overeating; that is, the human body has more calories than it needs. Overeating is dependent on appetite. Although research scientists do not yet know the underlying causes of excessive appetite, they do know that the causes are complex, involving psychological and social factors.

Most obese adults acquire the habit of overeating early in life. Parents believe that a plump overfed baby is a healthy baby. Also, parents overfeed children and set examples of overeating. Thus the child becomes fat because of parental dietary beliefs and practices. Parents must restrain their urge to overfeed children or to force the child to eat food it does not need. As children progress through the elementary school they should acquire dietary habits that prevent obesity. They should select foods providing essential nutrition but not high-calorie "yummy" dishes.

Obese teenagers are handicapped emotionally as well as physically. Excess fat on their growing bodies detracts from their appearance. Even though teenagers need large amounts of food, they should select foods from the Essential Four Food Groups and be "calorie-conscious." Weight control is a popular unit in the health education courses of the secondary school.

<sup>10</sup> R. W. Engel. "1963 Recommended Dietary Allowances." *Journal of the American Dietetic Association*, 44:93 (February 1964).



RECOMMENDED DIETARY ALLOWANCES, REVISIO 1963—FOOD AND NUTRITION  
BOARD, NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

	Age years	Weight lb.	Height inch	Calories	Protein gm.	Cal- cium gm.	Iron mg.	Vita- min A I.U.	Thia- mine mg.	Ribo- flavin mg.	Niacin mg. eq.	Ascor- bic Acid: mg.	Vita- min D I.U.
Children	6-9	53	49	2100	52	0.8	12	3500	0.8	1.3	14	60	400
Boys	9-12	72	55	2400	60	1.1	13	4500	1.0	1.4	16	70	400
	12-15	98	61	3000	75	1.4	15	5000	1.2	1.8	20	80	400
	15-18	134	68	3400	85	1.4	15	5000	1.4	2.0	22	80	400
Girls	9-12	72	55	2200	55	1.1	15	4500	0.9	1.3	15	80	400
	12-15	103	62	2500	62	1.3	15	5000	1.0	1.5	17	80	400
	15-18	117	64	2300	58	1.3	15	5000	0.9	1.3	18	70	400
Men	18-35	154	69	2900	70	0.8	10	5000	1.2	1.7	19	70	
	35-55	154	69	2600	70	0.8	10	5000	1.0	1.6	17	70	
Women	18-35	128	64	2100	58	0.8	15	5000	0.8	1.3	14	70	
	35-55	128	64	1900	58	0.8	15	5000	0.8	1.2	13	70	

SOURCE: R. W. Engel: "1963 Recommended Dietary Allowances," *Journal of the American Dietetic Association*, 44: 93 (February 1964).

## TYPE "A" LUNCH

One third of the daily nutritional requirements for a boy or girl of 10 to 12 years can be provided by a Type "A" lunch. Slightly smaller portions of food than those to be mentioned might be given to a child from 6 to 8 years of age. Larger servings of food may be needed by secondary school students. The Type "A" lunch is composed of the following:<sup>11</sup>

1. *Whole Milk*: One-half pint of unflavored fluid whole milk as a beverage
2. *Protein-Rich Food*: Two ounces of lean meat, fish, or poultry; or two ounces of cheese; or a half cup of cooked dry beans or dry peas; or 4 tablespoons of peanut butter; or one egg; or an equivalent quantity of any combination of these foods
3. *Vegetables and Fruits*: Three fourths of a cup of two or more vegetables or fruits, or both
4. *Bread*: One slice of whole-grain or enriched bread; or a serving of muffins, rolls, biscuits, cornbread, etc., made of enriched or whole-grain flour or meal
5. *Butter or Fortified Margarine*: Two teaspoons of butter or fortified margarine

The Type "A" lunch is recommended by the United States Department of Agriculture and has undergone some changes since its original pattern was designated in the National School Lunch Act of 1946.

## CALORIC INTAKE

The daily and weekly caloric intake of the school lunch should be considered. If the child eats a complete meal at school each day, the meal will represent approximately one third of his daily food intake. If the child eats a complete meal at school five days of the week, the five meals represent one fourth of his total food intake for the week. Nutritionists give these statements on the assumption that the other two meals consumed each day are supplying their share of the child's nutritional needs. In some instances, if the child is not eating adequate amounts and varieties of foods at the other two daily meals, it may be desirable to supply more than one third of the child's daily food intake at the school lunch.

Small schools, having no cafeteria or lunchroom facilities, may provide this one third of the daily food intake through the prepatation, at school,

<sup>11</sup> Marion Cronan. *The School Lunch*. Peoria, Ill.: Chas. A. Bennett Company, Inc., 1962.

of one hot dish supplemented by packed lunches brought from home. Soup or a hot milk beverage often supplements the home-packed lunch. If milk is served to drink, the supplementary dish need not contain milk. Some examples of hot dishes are creamed meat, fish, or eggs with a baked potato; scalloped macaroni with cheese; cheese fondue; meat and vegetable loaf; scrambled eggs with a vegetable; vegetable stew; and scalloped vegetables. Orange juice might supplement the home-packed lunch in addition to milk. Soups are popular foods to provide a hot dish with the packed lunch.

Schools that do not provide a hot dish or milk should work closely with parents to make the home-packed lunch appetizing and nutritious. Foods in lunch boxes are often left uneaten or are thrown away for a number of reasons. The contents of the box may be unappetizing or untidy; there may be too much food; menus sometimes become monotonous; leftover foods may have been used; the lunch box may be too cumbersome to carry; and the food may have been wrapped in dirty paper bags. Through adult health education, parents can be given suggestions for lunch-box menus that will satisfy hungry boys and girls.

## SUPPLEMENTARY FEEDING

Supplementary feeding can be supplied in the midmorning and/or the midafternoon as "snack" periods. These snacks provide additional food to the child who had an inadequate breakfast, or had a very early breakfast in order to reach school in time, or has a long bus trip home, or has been discovered to have nutritional problems by his family physician, or has recovered from a long siege of illness, or has a poor appetite. Young children and adolescents can profit from these snack periods. This additional feeding usually consists of milk, orange juice, fruit, crackers, or sandwiches. These snacks should be small in quantity and should not take on the proportions of extra meals. Genuine fruit juices may prove to be appetizing and promote digestion. Fruit juices are sources of vitamins and mineral elements. Milk is an excellent supplementary fluid food source, which contains many of the needed vitamins, mineral elements, carbohydrates, fats, proteins, and water. Fruits are considered to be our most delicious natural food product. Fruits stimulate appetite and digestion, assist in intestinal movements and prevent constipation, act as body alkalisers, and promote general health. If many children come to school without breakfast, supplementary feeding in the form of a breakfast may be served. The breakfast may consist of ready-to-eat cereal, milk, and fruit. Children may start the day with no breakfast because they sleep late, may not be hungry when they get up, or may be constipated, or because no breakfast was prepared.

## SALE OF CANDY AND SWEETENED SOFT DRINKS

There should be school administrative policies that exclude the sale of candy and sweetened soft drinks. These administrative policies can be governed by authoritative statements from the Council on Food and Nutrition of the American Medical Association, the American Dental Association, the National Congress of Parents and Teachers, and the Food and Nutrition Board of the National Research Council. The Council on Food and Nutrition of the American Medical Association states: <sup>12</sup>

One of the functions of a sound lunch program is to provide training in sound food habits. The sale of foods, confections, and beverages in lunchrooms, recreation rooms, and other school facilities influences directly the food habits of the students. Every effort should be extended to encourage students to adopt and enjoy good food habits. The availability of confections and carbonated beverages on school premises may tempt children to spend lunch money for them and lead to poor food habits. Their high energy value and continued availability are likely to affect children's appetites for regular meals. Expenditures for carbonated beverages and most confections yield a nutritional return greatly inferior to that from milk, fruit, and other foods included in the basic food groups. When given a choice between carbonated beverages and milk or between candy and fruit, a child may choose the less nutritious. In view of these considerations, the Council on Foods and Nutrition is particularly opposed to the sale and distribution of confections and carbonated beverages in school lunchrooms

The Council on Dental Health of the American Dental Association adopted the following resolution in 1950: <sup>13</sup>

Whereas, the consumption of candy, soft drinks, and other confections prepared with concentrated fermentable sugar is associated with an increase in dental caries, and

Whereas, the excessive ingestion of such confections replaces and reduces the use of more complete and nutritive foods, therefore, be it

Resolved, that the sale of candy, soft drinks, and other confections in schools be discouraged.

The Executive Committee of the National Congress of Parents and Teachers expressed this point of view: <sup>14</sup>

<sup>12</sup> American Medical Association, Council on Food and Nutrition. "Confections and Carbonated Beverages in Schools. A Council Statement." *Journal of the American Medical Association*, 180:118 (June 30, 1962).

<sup>13</sup> American Dental Association, "Proceedings, Council on Dental Health." Chicago: The Association, October 25-27, 1950.

<sup>14</sup> Executive Committee of the National Congress of Parents and Teachers, "Statement Concerning the Sale of Carbonated Beverages, Candy, and Other Confections in Schools Operating Lunch Programs." *National Congress Bulletin*, 19:1 (September 1951), p. 19.

The National Congress of Parents and Teachers, aware at all times of the needs of children, has recognized the need for a sound program of nutrition education in the schools by creating the parent-teacher School Lunch Committee. The purpose of the committee is to assist schools in developing a program that will give growing children experience in building sound food habits so necessary for their health and well-being.

The sale of carbonated beverages, candy, and other confections in schools may interfere with effective nutrition education. Many children spend lunch money for these less nutritious foods and are at the same time deprived of valuable learning experience. In this connection we call attention to a similar statement made by the Council on Foods and Nutrition of the American Medical Association.

We recognize that the sale of these items in schools is an administrative problem and that the responsibility of the parent-teacher organization is interpreting to parents the dangers involved in substituting these items for milk and other more nutritious foods in the child's diet, so that parents will give administrators the backing needed to remedy this situation. . . .

## SCHOOL LUNCH

A home-packed lunch supplemented by a hot dish, a plate lunch, and a cafeteria-style lunch are the three common types of noonday school meals. Soup or hot milk beverage often becomes the hot dish supplementing the home-packed lunch. The plate lunch consists of all foods served on one plate except the half pint of milk. Schools with small enrollments try to serve the plate lunch because it eliminates the need for extensive kitchen equipment and facilities and large staffs of lunchroom workers. The cafeteria-style lunch permits the student to select his foods. Varieties of foods are prepared in cafeteria kitchens. Lunchroom workers place selected foods on plates, or students pick up their choice of foods.

## SUPERVISION

Regardless of the type of noonday meal, supervision of the lunch activities is essential. The kind of supervision will depend on the (1) size of the school and/or the school system; (2) availability of a dietitian as the director; (3) recruitment of community personnel serving as workers, and in many schools as lunch managers; (4) type of lunch served and method of service; and (5) length of a serving period.

The lunch manager is responsible for planning, preparing, and serving the noonday meal. The manager must train cooks, helpers, attendants, or other workers. The manager must plan daily menus, purchase food, provide adequate food storage, fulfill all sanitary measures, provide cleanliness in food preparation and eating areas, comply with local health regulations, keep records, and handle finances.

Menus should be planned not less than 1 week or more than 2 weeks in advance. School lunch should be planned primarily for its nutritional values. Variety in menus can be maintained from day to day by combining the same foods in different types of dishes. Using a different menu pattern each day will ensure variety. Texture and consistency of foods are important factors. There should be variety in texture of foods served together, and repetition of color should be avoided. Contrasting food flavors make meals more appetizing, but more common food likes and dislikes should be considered when flavors are combined. Popular foods should accompany foods not too well liked. Younger children like plain and unmixed foods, easy-to-eat foods, and moist—not soupy—foods. They object to strong flavors and highly seasoned foods.

### FOOD PREPARATION AND SERVING

The manager must devise plans for food preparation and serving. Food preparation requires careful handling of food and proper methods of cooking. School meals must be balanced not only for nutritional values but also for attractiveness and palatability. Care must be given to every detail of the noonday meal. Pupils will eat foods which are appetizingly prepared. Food served should consist of "whole" meals. Desserts should be the last food item served. New foods should be served at intervals. Every effort should be made to persuade students to accept new foods. School menus should be adapted to seasons of the year. Menus can include festive touches for holidays and special school events. Foods should be carefully separated in suitable dishes. Trays of proper size for carrying complete meals should be provided.

The school lunch may be served by food workers at a counter, by service at tables, or by service in the classroom. Pupils pass in a line before a counter and either select their food or receive plates with prepared foods. The plate may be filled as pupils pass along the counter or may be filled before the pupils arrive at a counter. Milk, straws, napkins, and silverware are dispensed at the counter. Service at tables occurs when served plates are placed on lunchroom tables before the pupils come to the lunch room. Service in the classroom may be utilized when the school has no dining area. Food is prepared in the school kitchen or a centrally located kitchen within the school system and is brought to the individual classroom on a steam table.

The serving of food will require careful planning. For each serving period there should be adequate amounts of food; cooked foods should retain their warmth; extra food should be available for refills, and food handling should comply with health regulations. If the school has limited facilities, several serving periods will be necessary. Sufficient time should be allotted for serving the prepared food, and for eating and disposal of

soiled dishes and silverware, so that there is no sense of hurry. The efficiency of the serving period can be judged as the pupil progresses along the serving line and is quickly served without undue rush or needless waiting. Food workers serving elementary school children should be familiar with the proper size of the serving.

### SANITARY MEASURES

It may be necessary to wash dishes between serving periods because of the large number of pupils served. The manager is responsible for maintaining scrupulous cleanliness of dishes. Dishes must be sterilized by approved methods. Soiled dishes, silverware, and cooking utensils can be a means of spreading diseases. Glassware, too, if used, must be thoroughly sanitized.

The manager will be responsible for planning the daily and weekly cleaning schedule and assigning these tasks to different workers. Cooking utensils, serving tables, eating areas, work counters, and other areas of the lunchroom should be cleaned daily. Stoves, ovens, refrigerators, and dish-washing machines should be cleaned weekly. The removal of garbage and waste must also be a part of the daily cleaning schedule, and daily measures must be taken to eradicate flies, roaches, ants, and rats. Nothing can mar the popularity of the school lunch as easily as an outbreak of digestive disturbances because of contaminated food.

All school lunchrooms should fulfill the regulations for sanitation established by local and state departments of health. These regulations include medical examinations, chest roentgenograms, and laboratory tests of all food workers. In order to prevent food-borne diseases, the workers need to receive in-service training for the handling of food. A daily check list could be used for the inspection of floors, walls and ceilings, doors and windows, lighting, ventilation, toilet facilities, water supply, cleanliness of utensils and equipment, storage and handling of utensils and equipment, disposal of wastes, refrigeration, storage and serving of food and drink, and cleanliness of employees.

### LUNCHROOM OR CAFETERIA— TEACHING LABORATORY

Nutritionists have urged elementary teachers and school health educators to use the lunchroom or cafeteria as a teaching laboratory. Nutrition education is more meaningful when the pupil is actually eating. Table etiquette can be practiced during his snack periods as well as during the lunch hour. Sitting posture when eating is an important part of social behavior. Rather than discuss foods, table etiquette, and posture, the teacher has a laboratory in which the pupil can practice health habits and social behavior. As the pupil eats his food, he can indicate the Essen-

tial Four Food Groups and give the reasons for his food selection. The pupil's use of silverware can be observed. The preparation of food and the sanitizing of dishes can be observed by pupils. Social behavior can be corrected and improved at the midmorning snack and noonday meal. With teacher supervision, pupils can prepare some foods in the lunchroom or cafeteria at hours when food workers have completed their daily tasks. Lunchroom tables can be used for table settings. The disposal of garbage from lunchrooms and cafeterias can be demonstrated to explain methods of preventing insect- and rodent-borne diseases. There are unlimited opportunities available to elementary teachers and school health educators in the use of the lunchroom or cafeteria as teaching laboratories.

Each year, more than 5000 new school lunchrooms open. More than 2.5 billion school noonday meals are served every year. Thus the lunchroom or cafeteria could be an effective teaching laboratory in promoting school nutrition.

## FOOD FADDISM

Elementary and secondary school teachers should be alert to the overwhelming increase in food faddism that has reached the American public. The public, because of its ignorance, has accepted not only "health foods" but also the "teaching" of numerous faddists. Boys and girls, ages 10 through high school, should be aware that "vitamin-mineral supplements," "natural foods," and diet therapeutic substances are not needed in the daily diet. Many of these products of the food faddists contain ingredients in excess of the daily dietary requirements recommended by the Food and Nutrition Board, National Research Council. Food faddists stress misleading statements about weight control, treatment of arteriosclerosis, lowering of blood cholesterol levels, improving the complexion, treatment of diabetes and mental illness, increasing sex drive, and reducing dental caries. They emphasize that the major cause of disease and poor health is "devitalized foods" and give the four myths of nutrition:

1. All diseases are spread by faulty diets.
2. Soil depletion results in human malnutrition.
3. Nutritive values of foods are destroyed by commercial food processing.
4. Americans need concoctions to supplement their diets because Americans have subclinical deficiencies.

These myths are forced on the American public by the food faddist as "nutritional science."<sup>15</sup>

<sup>15</sup> K. L. Milstead. "Recent Developments in the Food and Drug Administration's Program against Nutritional Nonsense." Presented at the 45th Annual Meeting, American Dietetic Association, October 9, 1962.



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## COMMUNITY RESOURCES

"Two terms, "official" and "nonofficial," as related to community health agencies, have appeared in public health publications. Official health agencies are those financed by taxation and authorized by state and federal legislative action to fulfill specific functions. Nonofficial health agencies receive their funds from legacies, sale of advertised products, voluntarily subscribed memberships, monetary donations, and privately financed community projects.

## OFFICIAL AGENCIES

Two official agencies will be presented: public health and public education. Each of these divisions can be at the federal, state, and local levels.

## PUBLIC HEALTH—FEDERAL

The federal agency is the United States Public Health Service under the direction of the Secretary of Health, Education, and Welfare. Established in 1798, the Service has undergone changes in its sources of funds, organization, functions, name, and location in the federal government. In 1912, it was named the United States Public Health Service, and in 1953 it was a part of the Department of Health, Education, and Welfare. The Service has four bureaus: Office of the Surgeon General; Bureau of Medical Services; Bureau of State Services; and National Institutes of Health. Some of its functions<sup>1</sup> are to:

1. Determine needs for health personnel, facilities, and methods, and the resources for meeting these needs
2. Operate institutions, hospitals, and stations to provide medical and dental treatment and care for categories or groups of persons specified by Congress

<sup>1</sup> *Public Health Service: General Organization, Functions, Procedures and Forms.* Washington, D.C.: Public Inquiries Branch, Office of Information, U.S. Public Health Service, 1958, pp. 2-3.

3. Cooperate with States and assist in solving health problems in the fields of narcotic drugs, communicable diseases, quarantine, and other health areas
4. Prepare comprehensive water pollution control programs to improve the sanitary conditions of surface and underground waters...
5. Conduct and support research and provide technical assistance in the field of air pollution
6. Collect, prepare, and distribute data on births and deaths and other vital statistics
7. Collect, analyze, and disseminate information on the amount, distribution, and effects of illness and disability in the United States...
8. Conduct scientific research, investigations, experiments and demonstrations related to the cause, prevention, diagnosis, treatment, and control of the physical and mental diseases or impairments of man
9. Award grants to finance the construction of health research facilities at non-Federal institutions to improve the housing of such facilities
10. Provide health and medical services to 370,000 Indians and Alaska natives...
11. Assist in the advancement of medical science by providing for the collection, analysis, and use of published literature on medical and allied subjects
12. Administer aspects of the Federal law involving the provision of medical and dental care of uniformed services personnel...
13. Make grants-in-aid...
14. Promote the training of professional personnel in the sciences of public health and medicine
15. Provide technical assistance through consultative services or loans of personnel to the States and to Federal agencies and through issuance to the public of information related to public health
16. Participate in world health activities, in accordance with United States policies of international cooperation...
17. Administer the Federal law to ensure safety, purity, and potency of biological products, and conduct research leading to their standardization
18. Prescribe and enforce quarantine and sanitary regulations to prevent the introduction from abroad, and spread in the United States or its possessions, of communicable diseases
19. Provide physical and mental examinations which may be required by immigration laws and for aliens seeking entry into the United States
20. Advise with respect to the disposal of Federal surplus property usable for the protection of public health and for health research
21. Conduct national health conferences...
22. Develop special civil defense health measures for use in a civil defense emergency

There are nine National Institutes of Health: National Cancer Institute; National Heart Institute; National Institute of Arthritis and Metabolic Diseases; National Institute of Dental Research; National Institute of Mental Health; National Institute of Neurological Diseases and Blindness; National Institute of Allergy and Infectious Diseases; National Institute of

Child Health and Human Development, and National Institute of General Medical Sciences.<sup>2</sup>

## PUBLIC HEALTH-STATE

At the state level, there are numerous health services dispersed among separate departments of state governments. Each state, however, has one particular agency charged with the over-all health program of the state. This agency is usually called the State Department of Health.

To acquaint citizens with the functions of state departments of health, the American Public Health Association adopted an official statement of these functions. Three general categories of activities may be found in a state health department, as suggested in the official statement. These categories include personal health services, community health services, and administrative services. Among the personal health services are immunization procedures; maternal and child health; diagnosis, care, and treatment of tuberculosis; and procedures to facilitate the early discovery of cancer. Community health services embrace fluoridation of water supplies; sanitary inspection of food, water, and milk; control of communicable diseases; and disposal of sewage. Administrative services include the organization and operation of all state health department activities, coordination and evaluation of these activities, personnel necessary to staff them, and financing of these services.<sup>3</sup>

Many divisions and bureaus are established in state departments of health to handle vital statistics, environmental health, communicable diseases, tuberculosis, cancer, venereal diseases, laboratory services, nutrition, maternal and child health, public health education, public health nursing, industrial hygiene, food and drugs, dental health problems in public health, mental health, coordination with local health services, hospital administration, and other public health problems.

## PUBLIC HEALTH-COUNTY AND LOCAL

Many county health departments are being established to provide health services in rural areas. Such a department may serve from 25,000 to 50,000 persons and may cover more than one county. Small cities with populations of 10,000 or 20,000 people may be included in these county health departments.

A modern county health department will employ a full-time medical officer, public health nurses, a sanitary engineer and trained inspectors, laboratory technicians, a health educator, a nutritionist, a social worker, clerks, and part-time physicians and dentists. The county health department has clinics for immunization, venereal diseases, the well-child, tuber-

<sup>2</sup> United States Department of Health, Education, and Welfare. *National Institutes of Health*. Washington, D.C.: Government Printing Office, 1963, p. 5.

<sup>3</sup> "The State Health Department—Services and Responsibilities." *American Journal of Public Health*, 44:235 (February 1954).

culosis, and dental health. The administrative responsibilities are under the direction of the medical officer. The board of health decides general policies, approves the budget, and selects the medical officer.

The local health department is financed through taxation and is administered as a part of the local government. It is the official disease-prevention agency and assumes the responsibility for protecting citizens from disease. The effectiveness of the local health department, however, will depend on the community's recognition of its numerous health problems and willingness to cooperate, and the finances enabling employment of personnel needed to cope with community health problems. The public health cost per capita in a community is small when compared to the per capita costs of other local government expenses. The personnel needed in the local health department will depend on the community's population; scope of health problems; accessibility of physicians, dentists, nurses, and hospitals; control of disease through proper sewage, waste, and garbage treatment methods; and adherence to state regulations established to protect the health of citizens. Larger cities deal with their own health problems through their city health units dispersed throughout the city.

The most widespread function of the local health department is its public-health nursing service. Some of the other responsibilities of the department are the operation of clinics for supervision of maternity patients and young children; immunization against smallpox, diphtheria, and other communicable diseases; dental health; diagnosis of tuberculosis and venereal diseases; mental hygiene; diagnosis and/or treatment of cancer; and diagnosis of heart disease and diabetes. Additional services of the local health department include the supervision of water supplies, facilities for sewage treatment, milk production and distribution, and food-handling establishments; diagnostic laboratory services; cooperation with school health services personnel; nutrition services; and general public health education. The local health department also collects and analyzes all data relative to vital statistics.

## PUBLIC EDUCATION

The federal agency in education is the United States Office of Education, under the direction of the Secretary of Health, Education, and Welfare. Created in 1867, it has undergone changes in its functions, name, and location in the federal government. The Office of Education collects information and statistics on elementary and secondary schools, colleges and universities, libraries, instructional programs, and administrative procedures. It conducts and grants aid in educational research. It offers advisory and consultant services to each state and to local schools, to colleges and universities, and to representatives of foreign countries. It administers funds as grants-in-aid.

The state agency responsible for education has many official titles, such

as State Department of Education, Department of Public Instruction, and Education Agency. Because American public schools have vested their authority in the local school system, the state education office has limited powers. However, it is responsible for the school census, teacher certification, accreditation of schools and school systems, lunch programs, bus regulations, vocational rehabilitation, veterans' education, financing of bonds and investments, trade and industrial education, specifications for new and remodeled school plants, curricular and instructional patterns, state-adopted textbooks, approval of instructional materials, and other functions.

A board of education is the official governing group of the local elementary and secondary schools. The superintendent is responsible for the functioning of the school system. He has general and specific responsibilities within the school health program (Chapter 18).

## NONOFFICIAL AGENCIES

The nonofficial agencies are extensive and varied because of the wide scope of their health services. Six groups will be presented.

### PROFESSIONAL GROUPS

*American Association for Health, Physical Education and Recreation* Among the many professional groups is the American Association for Health, Physical Education and Recreation, a department of the National Education Association. The association offers consultant services in health education, serves as a liaison agent between the National Education Association and the American Medical Association, cooperates with other non-official agencies, and publishes many types of health education materials. Both the *Journal of Health, Physical Education, and Recreation* and the *Research Quarterly* contain information about school health.

*The American School Health Association* The American School Health Association was first organized in 1927 as the American School Physicians Association. Membership is drawn from physicians, nurses, dentists, health educators, nutritionists, school administrators, dental hygienists, public health educators, and other professional personnel interested in school health programs. Its purpose is to promote health services, healthful school living, and health education. It publishes the *Journal of School Health*.

*The American Public Health Association* The American Public Health Association was organized in 1872 by a group of public health authorities who recognized the need for a national organization representative of every phase of public health. This association is the largest and best-known organization of the public health professions. The association has many technical committees studying such problems as water supply, air

pollution, standards for milk and milk products, germicides and antibacterial agents, sewage treatment, nutrition, airborne infections, radiation, accident prevention, and child health. The *American Journal of Public Health* is its official publication.

*The American Medical Association* Since 1921, the American Medical Association has published a popular health magazine. In 1950, the title was changed to *Today's Health*. The Department of Community Health and Health Education, of the association, has sponsored every odd-numbered year a National Conference on Physicians and Schools to promote the total school health program. Through these conferences, data have been published on medical examinations, emergency care, control of communicable diseases, and physical and mental health guidance. It is through the efforts of the department that the Joint Committee on Health Problems in Education has worked with the National Education Association since 1911. In 1960, the House of Delegates of the Association passed a resolution which stressed that health education should be an integral part of the curriculum in the elementary and secondary schools and in colleges.

*The American Dental Association* The American Dental Association has aided dental progress through research and education, and by increasing the scope of dental care. The Council on Dental Therapeutics of the association has been evaluating products used in the treatment and prevention of dental diseases since 1930. The first edition of *Accepted Dental Remedies*, which listed and evaluated dental products, appeared in 1934. Most educational materials on dental health are produced by the association. This service has been available to teachers since 1934. Because of the demand for educational materials, the association established a Bureau of Health Education in 1954.

*The American Nurses' Association* and the *National League for Nursing* The public health nurse working with the school health program and the school nurse are members of the American Nurses' Association and/or the National League for Nursing. In 1896, the American Nurses' Association was organized; its present name adopted in 1911. ANA members are professional registered nurses representing every occupational field of nursing. Following 10 years of preparation and planning, the National League for Nursing was formed in 1952. Professional and practical nurses and nursing aides, persons in allied professions, persons interested in good nursing, nursing services, and agencies and institutions with educational programs in nursing are members of the NLN.

Other professional groups contributing to elementary and secondary school health programs are:

American Academy of Ophthalmology and Otolaryngology  
American Academy of Pediatrics

American Dietetic Association  
 American Home Economics Association  
 American Optometric Association  
 American Physical Therapy Association  
 American Society of Heating and Ventilating Engineers  
 Association for Physical and Mental Rehabilitation  
 Illuminating Engineering Society  
 State Directors of Health and Physical Education

## COMMUNITY VOLUNTARY HEALTH AGENCIES

Community voluntary health agencies consist of many diversified groups. The purposes of the agencies tend to vary with the services rendered to the local community, though not all communities have local chapters or units of the agencies. The agencies are so numerous that it is impossible to list all of them here. Only a few will be mentioned.

*The American Cancer Society* The American Cancer Society had its origin in the American Society for the Control of Cancer founded by a small group of physicians and laymen in 1913. In 1944, the present name of the society was adopted. The society's basic aim is to educate the public so that no one will lose his life needlessly to cancer because of ignorance. The major fields of program operation are service, public education, research, and professional education. The society's public education is focused at the fact that early cancer is among the most curable of the major causes of death. Many persons are completely cured and many lives are saved as a result of the society's public education.

*The American Diabetes Association* The American Diabetes Association was organized in 1940 by a group of physicians who were deeply concerned with the growing problem of diabetes. In addition to the lay public, its present membership includes physicians who are engaged in directing diabetes clinics, treating patients, teaching diabetes control and management, and conducting basic research in diabetes.

*The American Hearing Society* The American Hearing Society and its local chapters provide many types of services to assist the hard-of-hearing child or adult. These services include audiometric tests, lip-reading instructions, speech correction, voice improvement, auditory training, hearing-aid consultation, courses for parents of hard-of-hearing children, and instruction of preschool children with a hearing loss.

*The American Heart Association* In 1924, the American Heart Association was founded by a group of physicians to combat heart disease through scientific and educational activities. In 1948, the association was reorganized as a national voluntary health agency; it admitted laymen as well as physicians to its membership. Chapters and affiliates of the association have a four-point program: (1) research to obtain scientific data



on the heart and circulatory system and their diseases; (2) community facilities to assist the cardiac patients; (3) postgraduate education for medical, health, and social welfare professions; and (4) public education to assist laymen in solving the problems presented by cardiovascular diseases.<sup>4</sup>

*The American National Red Cross* The interval between 1882 and 1914 is considered the formative period of the American National Red Cross. During 1908 and 1909, the First Aid Service was organized to fill the need for a nation-wide program of instruction in emergency care of the injured. The Red Cross Public Health Nursing Service originated in 1912. The Life Saving and Water Safety Service was established in 1914. The nutrition program was expanded in courses of Home Hygiene and Care of the Sick during 1939. Safety Services fused together first aid, water safety, and accident prevention in 1947. Services available in local chapters include Services to Armed Forces and Their Families, Services to Veterans and Their Families, Disaster Services, Blood Services, Nursing Services, Safety Services, International Services, Youth Services, and Supportive Volunteer Services.

*The American Social Health Association* The American Social Health Association has undergone many changes since 1914. It took an active role in organizing the International Union against the Venereal Diseases in 1920. The American Social Health Association promotes family life education in public and private schools and in institutions of higher learning. It has assisted in the enactment of laws of social hygiene and in premarital and prenatal blood tests. It has promoted education in the reduction of the venereal diseases and education in the eradication of drug addiction.

*The National Association for Mental Health* As a result of a 1908 classic autobiography, the National Committee for Mental Hygiene was founded. In 1950, the National Association for Mental Health was organized. Some of the activities of state and local chapters include improvement of conditions in mental hospitals, hospital volunteer services, assistance to families and mentally sick persons, rehabilitation of the patient formerly ill, information and counseling services, establishment of mental health clinics, public education, and adoption of procedures for admission to and discharge from mental hospitals which will assure that the patient is dealt with as a sick person. Also, it promotes a coordinated research program to study functions of human behavior.

*The National Foundation* In 1958, the National Foundation for Infantile Paralysis, because it had expanded its program to other fields, changed its name to the National Foundation. When it was founded, in 1937, it realized that an attack on poliomyelitis would succeed if the attack

<sup>4</sup> Personal letter, Dr. Marian Hamburg, School Health Consultant, American Heart Association, August 26, 1958.

was waged vigorously. Thus, in the intervening years, the NFIP supported investigators who worked in the field of virology as well as the specific disease, polio. With the success of the Salk and Sabin vaccines for polio, the National Foundation has developed a program that includes virus diseases, arthritis, congenital malformations, disorders of the central nervous system, and further investigation in poliomyelitis. In addition to the medical and scientific research, the foundation has a professional education program and a medical care program.

*The National Health Council* Members of the National Health Council are professional societies and voluntary health organizations. Organized in 1921, the National Health Council is a conference ground for exchange of ideas, information, and community action. NHC assists in the establishment of local and state health councils, improvement of local official health services, encouragement of young people to seek health careers, and knowledge of how national agencies can help a community.

*The National Society for Crippled Children and Adults* There are many local and state societies affiliated with the National Society for Crippled Children and Adults. The society's program includes (1) education of the public, professional workers, and parents; (2) direct services providing care and treatment, education, and rehabilitation of crippled children and adults; and (3) research to provide increased knowledge of the cause of crippling conditions, and the prevention, care, and treatment of these conditions.

*The National Society for the Prevention of Blindness* The National Society for the Prevention of Blindness engages in a program of eliminating preventable loss of sight. Organized in 1915, the society publishes numerous pamphlets and bulletins on various eye conditions and diseases. Research projects on visual screening procedures, public education, and coordinated ophthalmological and optometric testing have been sponsored.

*The National Tuberculosis Association* In 1892, the Pennsylvania Society for the Prevention of Tuberculosis was founded in order to eradicate tuberculosis. The National Tuberculosis Association was established in 1904, following the pattern of the Pennsylvania Society. Between 1905 and 1912, the National Tuberculosis Association stimulated the organization of state and local associations. In 1907, Emily Bissell held the first sale of Christmas Seals in Delaware. The Christmas Seal had its origin in Denmark, where, during 1904, a postal clerk had the idea of selling Christmas Seals to care for children with tuberculosis. Knowing what had occurred in Denmark, Emily Bissell raised sufficient money to care for tuberculous patients.

During 1917, the National Tuberculosis Association formulated its

modern program, started the Framingham Demonstration, and began a children's education program. From 1920 to 1930, the association promoted a campaign for tuberculosis hospital beds and changes in the treatment of tuberculosis. Since 1930, the association has increased its programs of public education, case detection, research, medical education, treatment and rehabilitation, tuberculin testing, detection of respiratory diseases, clinical nursing, and public health.

*The Planned Parenthood Federation of America* The Planned Parenthood Federation of America is a subdivision of the International Planned Parenthood Federation. Founded in 1921, the federation is a community-centered program for medical child spacing, infertility treatment, and marriage education. It provides public information about population growth in local, national, and global dimensions. The federation is continuously gaining religious and community support of its investigation of the global population explosion.

Other community voluntary health agencies are:

American Foundation for the Blind  
Arthritis and Rheumatism Foundation  
Maternity Center Association  
Muscular Dystrophy Associations of America  
National Council on Alcoholism  
National Cystic Fibrosis Research Foundation  
National Epilepsy League  
National Multiple Sclerosis Society  
United Cerebral Palsy Association

## YOUTH GROUPS

The third group of nonofficial agencies differs in its organization, programs, and purposes, and in the manner in which its functions are related to school and community life. Some of the agencies are found entirely within schools; others act as independent community organizations. Among the youth groups are 4-H Clubs, Future Farmers of America, Future Homemakers of America, Boy Scouts of America, Girl Scouts of America, Boys' Clubs of America, Camp Fire Girls, American Junior Red Cross, Young Women's Christian Association, and Young Men's Christian Association.

## CIVIC, SOCIAL, SERVICE, CHILD WELFARE, AND OTHER COMMUNITY AGENCIES

The fourth group of nonofficial agencies includes community service organizations, social clubs, fraternal organizations, recreation agencies, religious associations, labor unions, patriotic organizations, the Salvation Army, United Fund, National Congress of Parents and Teachers, Alcoholics Anonymous, and child welfare associations. These civic, social, serv-

ice, child welfare, and other community agencies contribute to projects in their local communities or to state or national projects benefiting the health of children and youth. Some of their projects are:

1. Assistance to child-care centers and day nurseries
2. Camps for children with irremediable health problems
3. Clinical services for children with eye, ear, nose, and throat problems
4. Dental care and treatment
5. Purchase of mechanical aides for the handicapped
6. Provision of speech teachers for hard-of-hearing classes
7. Care and treatment of crippled children
8. Organization of school safety patrols
9. Employment of American Red Cross first-aid or water-safety instructors
10. Assistance to school lunch activities
11. Provision of summer and year-round youth recreation
12. Assistance to cancer, glaucoma, diabetes, and cardiac detection clinics

## FOUNDATIONS

Many foundations have been established to aid in the promotion of the health of this nation. These foundations assist in the preparation of physicians, public health personnel, nurses, school health educators, dentists, nutritionists, and research scientists in the health professions. They provide information on community and personal health problems. They finance research on the cause, prevention, and treatment of diseases. They assist in solving problems of hospital administration and allied health fields.

## COMMERCIAL AND SEMICOMMERCIAL GROUPS

This sixth group of nonofficial agencies may be sustaining and associate members of community voluntary health agencies. Single *commercial* organizations may supply to public school personnel health teaching aids, consultant services, and funds for in-service health education. *Semicommercial* groups are composed of many commercial organizations of the same type. The semicommercial groups supply reliable health information and teaching aids as one of their many services. Appendix B contains commercial and semicommercial groups.

## SCHOOL PERSONNEL'S USE OF OFFICIAL AND NONOFFICIAL AGENCIES

The functions of official and nonofficial agencies are broad in scope, and school personnel should be aware of the extent of their activities. If the health agency has a local headquarters, school personnel should visit

the agency. The local health agency may be able to furnish printed materials, such as posters, bulletins, pamphlets, graphs, charts, research abstracts, and textbooks for reference use by teachers. In addition, the local agency may be able to provide films, filmstrips, slides, models, exhibits, and other audiovisual aids. The health agency may also provide speakers for certain lessons in health education in the intermediate elementary and secondary school. A field trip to the local health agency may be planned by the class in health education. Consultants from health agencies may assist teachers in preparing health education units, in planning demonstrations and research studies in health education, and in enriching the health education curriculum. Such consultants may serve on the school health council, participate in the school health program, and promote school-community health projects.

In summary, the official and nonofficial agencies can be utilized by school personnel as (1) sources of health printed materials; (2) sources of audiovisual teaching aids used in health instruction; (3) special speakers; (4) locations for field trips; (5) consultants on health education, especially on its curriculum, demonstrations, and research studies; (6) members of the school health council; (7) participants in the school health program; and (8) resource people for school-community health projects.

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## HEALTH OF THE SCHOOL PERSONNEL

All teaching, administrative, service, and special personnel employed by a local board of education should be considered school personnel. These personnel include teachers, principals, superintendents, counselors, supervisors or consultants, secretaries, clerks, nurses, physicians, dental hygienists, school lunch workers, custodians, matrons, bus drivers, and other school personnel. Special school personnel may be part-time employees, nurses employed by the local health department, medical and dental specialists, psychometrists and psychologists, and school social workers. None of these personnel should be excused from regulations promoting the physical and mental health of employees, established by a board of education. These regulations are formulated on the basis of the welfare of the total school population rather than on the length of employment, employee's salary, or the legal status of the employee.

Most persons would concede that our physical and mental health is related to factors occurring during prenatal development, infancy, childhood, adolescence, and adult years. In this chapter, the health of the teaching and administrative staffs will be stressed, even though health requirements of other school personnel will be included. Thus the college health program, preservice teacher education, health requirements of school employees, and welfare practices will be mentioned.

### COLLEGE HEALTH PROGRAM

The college health program consists of college health services, healthful college living, and health education. College health services are mainly administered by student health centers. Healthful college living encompasses the total environment encountered by the student and its effects on the student's physical and mental health. Health education relates to the basic college health education course for all students and school health education courses for all prospective teachers.

Since 1920, the American College Health Association has participated

in the improvement of the health of *all* college students. The emphasis of the association has been placed on college health services where student illnesses, injuries, and psychological problems have been of major concern. Today's college student has available well-staffed and well-organized student health centers with diversified services. Clinical medicine in our student health centers includes work on many problems encountered by physicians in general practice, plus other problems of the medical specialties, such as otorhinolaryngology, allergy, dermatology, urology, gastroenterology, prnctology, psychiatry, and orthopedies. It is possible that, in the future, college medicine will become a medical specialty.

Not only the student's illnesses, injuries, and psychological problems but also the student's environment are of growing interest to the staffs of our student health centers. It is possible that these environmental contacts may be unsanitary or contribute to accidents. The staff must consider not only where the student lives but also where he dines, attends classes, studies, participates in physical education, and enjoys his leisure time on the campus. Thus staffs of student health centers have joined forces with staffs of student life activities, administrative personnel and faculty, and counseling and guidance services to eradicate any campus environmental conditions that may produce student illness, injury, or emotional problems.

In 1956, a National Conference on Health Education for All College Students and for All Prospective Teachers<sup>1</sup> was held. The conference revealed that all students need a basic college course in health education, and that all prospective teachers should have courses in school health education. The conference disclosed the inadequacies of the health education courses on many campuses. Even though investigations have been published concerning the college student's health misconceptions and his malpractices, and concerning the inadequate preparation of all prospective teachers in the school health program, the results of the investigations have been ignored. College students are aware of the incidence of diseases, injuries, emotional health problems, and other factors that influence their personal and family health. Students have discussed and desire information about mental illness, smoking and its physiological effects, alcoholism, drug addiction, health problems of young children, nutritinn, and the purchase of health products and services. In additinn, college students are confronted with the health problems of the newly married husband and wife, are involved with health problems of parents and elderly relatives, and have discussed with foreign students the health problems of other nations. Unfortunately, a

<sup>1</sup> National Conference on Health Education for All College Students and for All Prospective Teachers. *A Forward Look in College Health Education: Health Education for Prospective Teachers*. Washington, D.C.: American Association for Health, Physical Education, and Recreation, 1956.

basic college health education course for all students has not been accepted by all colleges and universities.

## PRESERVICE TEACHER EDUCATION

Many questions can be asked about the role of teacher education in the health of future teachers. What physical and mental health factors adversely affect teaching? Should the type of teaching or grade level be considered in evaluating the prospective teacher's physical and mental health? What are we asking of our teachers in elementary and secondary schools? Is there a realistic attempt to disclose emotional disturbances in prospective teachers, and are there valid instruments for disclosing these disturbances? What physical and mental health deviations should disqualify a prospective teacher? What are the mental health variables and personality problems that can have a detrimental effect on teaching? Does the prospective teacher receive professional school health education courses?

To find some of the answers to these and other questions, a screening selection committee should be available on every teacher education campus. The committee could investigate all questionable students entering the freshman year of any teacher education program. For prospective teachers not entering teacher education until their junior year, this selection would necessitate that faculty in the subject-matter fields accept their responsibilities for screening prospective teachers. The committee could consist of teacher education faculty, representatives of subject-matter fields, members of counseling and guidance services, administrative personnel, and a representative of the student health center. The screening committee would receive notification of all questionable persons desirous of becoming teachers. This committee might demand more objective data for selecting teachers than is available to the faculty.

The prospective teacher should be required to have:

1. A thorough medical examination at admission, prior to student teaching, and at graduation
2. Tuberculin testing annually; positive reactors would have chest roentgenograms
3. Complete cumulative health records on the mental and physical health of the prospective teacher, designed to include a summation of pertinent facts to be used by school employment officials
4. Continuous faculty advisement with the assistance of counseling and guidance services to "screen out" students with emotional health problems so that psychiatric aid can be had early in the undergraduate years



5. Screening vision, hearing, and speech during the freshman year so that remediable defects can be corrected and all screening repeated previous to student teaching
6. Physical education, utilizing health grade classifications given by family or college physicians, physical education tests, and posture screening
7. A health grade classification utilized for participation in college intramurals
8. A college environment that promotes sanitary measures and accident prevention
9. A basic college health education course previous to the professional school health education courses
10. A college health council to assist in solving the problems of the college health program
11. Professional school health education courses to provide the subject matter basic to the school health program and taught by professors prepared in school health education, with appropriate teaching experiences

The National Conference on Health Education for All College Students and for all Prospective Teachers stressed the *urgent* need for school health education courses. Too few elementary and secondary school classroom teachers and physical education teachers have received the subject matter basic to the school health program. They have not received health education subject matter for instructional purposes at the appropriate age levels in the elementary and secondary schools. The American Medical Association has stressed the importance of extensive preparation in school health services, healthful school living, and health education. The prospective teacher should know what "...constitutes an adequate school health program and should be prepared to assume the many responsibilities for the health of her students..." The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association made this statement in 1924: "Every prospective teacher, even when not specializing in Health Education should be required to take one course where the health program as a whole is considered, synthesis indicated, and methods of securing desired results are discussed."<sup>2</sup>

Thirty-seven years later, the same committee reiterated the concepts of the 1924 statement but emphasized specific subject matter and competencies needed by the prospective teacher in the school health pro-

<sup>2</sup> National Conference for Cooperation in Health Education. *Suggested School Health Policies* (3d ed.). Chicago: American Medical Association, 1956, pp. 35-36.

<sup>3</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education*. New York: The Committee, 1924, p. 76.

gram.<sup>4</sup> However, investigations of the preparation of prospective teachers show that many colleges and universities do *not* offer school health education courses. These courses would include the (1) basic subject matter of the school health program and (2) health education subject matter for instructional purposes at appropriate age levels in the elementary and secondary schools. If the preparation of prospective elementary and secondary school teachers omits school health education courses, how can we expect teachers to fulfill their responsibilities in the total school health program and to teach the basic subject matter of health education?

## HEALTH REQUIREMENTS OF SCHOOL PERSONNEL

Common health problems resulting in absenteeism among school personnel are numerous. Mental and emotional illness may be the most frequently reported health problem. Other health problems include heart diseases, tuberculosis, cancer, obesity, arthritis, venereal diseases, diabetes and other metabolic disorders, anemia, orthopedic deviations, glaucoma, dental health problems, vision and hearing difficulties, menstrual problems, and skin infections. Repeated respiratory infections are often overlooked because they have signs of common colds.

The following signs of possible defects, diseases, or illnesses need to be examined by the family physician or dentist:

1. Recurring pain
2. Recurring fatigue
3. Change in weight, sudden or extreme
4. Recurring headache
5. Continuous fever
6. Bleeding from the skin, nose, or body opening
7. Recurring indigestion
8. Sleeplessness
9. Changes in color or appearance of the skin or a growth on the skin
10. Abnormal restlessness, inattentiveness, aggressiveness, or shyness
11. Changes in vision such as squint, seeing double, losing side vision, seeing "halos" or "rainbows" around lights
12. Continuous swelling in the abdomen, at the joints, or in any part of the body
13. Unusual lumps or growths if they increase in size
14. Breathlessness after very little exertion
15. Persistent coughing
16. Persistent sore throat

<sup>4</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education* (5th ed.). Washington, D.C.: National Education Association, 1961, pp. 373-376.

17. Loss of appetite and strength
18. Excessive thirst and hunger
19. Painful or excessive urination
20. Repeated dizziness
21. Changes in bowel habits such as constipation and diarrhea
22. Changes in personality
23. Continuous loss of hearing
24. Recurring skin infections
25. Loose teeth, toothaches, swollen jaws, or refusal to eat hard food

These signs may be the result of the teacher's failure to assume his responsibilities for promotion and protection of his physical and mental health.

## MEDICAL EXAMINATION

The medical examinations of school personnel are considered to be vitally important but are often *neglected*. The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association discloses some of the reasons why medical examinations are *not* required of all school personnel. Some boards of education and administrative personnel consider the pupil's health more important than the health of school personnel. Not all school personnel are included in medical examinations. Statutory regulations in many states are permissive, vague, and directed to teachers, thus excluding other school personnel. Some regulations established by boards of education pertain to tuberculosis and venereal diseases and exclude other possible employee health problems discovered by the physician. It is possible that the medical examination may be optional with the employee, may have no length of time stated such as an annual examination, may have no provisions for re-examinations, and no penalties if the medical examination is not taken. Other boards of education require the medical examination only on "...warranted suspicion of ill health." The only medical examination required of employees may be at pre-employment. If the employee has frequent or prolonged illness, no provision may be stated for repeated medical examinations. Seldom is there any indication of who pays for the medical examination.<sup>5</sup>

Before discussing when the examination should be given and what the examination consists of, three concepts should be stressed. The medical examination of school personnel is a shared responsibility of both the employee and the board of education. The information found on the

<sup>5</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Examination of School Personnel*. Washington, D.C.: National Education Association, 1960, pp. 6-7.

employee's health record is confidential. The medical examination of school personnel should be given periodically.

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association has indicated when the medical examination should be given.<sup>6</sup>

1. Previous to employment.
2. Periodically during length of employment. *Annual medical examinations are preferred.* An interval of more than 4 years makes the results of the examination ineffective.
3. On warranted suspicion of poor health.
4. Following prolonged and repeated illness.
5. Prior to the employee's receiving tenure.
6. During early summer months to insure evaluation of findings previous to the beginning of the school year.
7. For returning retired employees, more frequent medical examinations.

The medical examination should include blood pressure, urinalysis, serologic tests, visual and hearing acuity, teeth and gums, pulse rate, temperature, height, weight, nose and throat, tonsils and lymph glands, thyroid gland, eyes, ears, nervous system, skin and hair, heart, chest, lungs, abdomen, orthopedic conditions, nutritional status, and any other phase the physician wishes to include. Even though there seems to be some controversy about the inclusion of the rectal and pelvic examinations, these phases of the medical examination should be undertaken. For the male school employee, both the rectal and prostate examinations should be given by the physician. For the female school employee, the rectal and vaginal examinations and examination of the female breasts should be included. The medical examination should be made by the family physician or a physician designated by the school. School personnel arrange the date of the appointment at the offices of the physician.

#### TUBERCULOSIS CASE FINDING

The chest roentgenogram may be designated as a part of the medical examination and may be required annually of each school employee. Because there is evidence that an actively infected tuberculous teacher infected 30 of 33 pupils,<sup>7</sup> the chest roentgenogram can be a valuable diagnostic tool for detecting tuberculosis. Routine 14" x 17" chest films are considered the most satisfactory method of tuberculosis detection. The films will also disclose other types of pulmonary and chest diseases.

<sup>6</sup> *Ibid.*, p. 10.

<sup>7</sup> A. A. Pleyte and E. Donald Brown. "Value of Tuberculin Testing in Younger Age Groups as a Clue in Case Finding." *Journal of School Health*, 28:127 (April 1958).

The Committee on Tuberculosis of the American School Health Association has published the qualifications of schools certified as Class A for tuberculosis case finding. These qualifications include all school personnel. All nonreactors to tuberculin tests should be retested every 2 years. All reactors to tuberculin tests should have chest roentgenograms. Whenever tuberculosis is suspected, further medical examinations and roentgenograms should be given to indicate whether the school employee has the disease. All reactors to tuberculin tests, regardless of chest roentgenograms, should receive further medical examinations to reveal if tuberculosis is present in parts of the body other than the lungs.<sup>a</sup>

### LABORATORY TESTS

An important part of the medical examination deals with the results of laboratory tests. These tests include blood counts, urinalysis, serologic tests for syphilis and other serologic tests, and other laboratory tests.

A serologic test for syphilis should be included with each medical examination. The results of a serologic test for syphilis may be positive. The test can indicate the third phase of syphilis, such as cardiovascular syphilis or cerebral-vascular syphilis. Family or school physicians should be consulted to see whether the school employee should or should not be employed during the period of medical treatment.

Other serologic tests can reveal the presence of the causative agents of bacillary dysentery, histoplasmosis, typhoid fever, paratyphoid fever, infectious mononucleosis, and certain rickettsial and viral diseases. These serologic tests are extremely necessary for food workers, custodians, and homemaking education teachers.

Other laboratory tests should include the "Pap" test for women school employees. This cytologic test can detect the presence of early signs of uterine cancer. Because many cells are shed daily from the lining of the uterus, it is easy to obtain samples of them; placed on a glass slide and stained, they can be examined under a microscope. The cells, if malignant, can be detected by the pathologist during the microscopic examination.

### OTHER EXAMINATIONS

School personnel should be aware that other examinations can reveal their physical and mental health status. An annual eye examination by an ophthalmologist can indicate unobserved changes in vision, early signs of visual defects and diseases, and signs of health conditions in other parts of the body, such as diabetes and syphilis. Glaucoma in its early stages can also be detected during the ophthalmological examination.

<sup>a</sup> J. Arthur Myers. "School Awards for Tuberculosis Control Measures in Progress." *Journal of School Health*, 30:310 (October 1960).

Psychiatric examinations are not uncommon among school personnel. Such examinations result from behaviors observed by family physicians, family and friends, school associates, and pupils. Some of the behavior patterns that may lead to mental and emotional health problems:<sup>9</sup>

1. Being sorry for oneself; sulking, or being too aggressive
2. Being self-centered and having no regard for others
3. Taking advantage of family and associates
4. Being mean, cruel, and hostile
5. Being overdependent on other persons
6. Being lazy and not fulfilling one's obligations
7. Being uncreative and having few interests
8. Failing to make decisions
9. Failing to help others and desirous only of one's own wants
10. Failing to evaluate fads
11. Being easily defeated and accepting failure
12. Being upset over trifles
13. Being unable to change to new situations
14. Being crabby, irritable, and moody
15. Violating social and moral codes

To avoid some of these behavior patterns, the adult's basic psychologic needs must be satisfied; he must be able to meet adult problems with mature techniques and attitudes, and he must be able to cope with adverse conditions. Some of the psychologic needs are affection, recognition, security, creative expression, new experiences, and self-esteem.<sup>10</sup>

An annual dental examination and roentgenographic survey can reveal dental diseases and defects *unseen in a regular inspection* by the family dentist. Oral cancer may be detected by roentgenographic surveys. If dental diseases and defects are detected early and treated, the adult may improve his appearance and avoid the necessity of dentures.

## HEALTH RECORD

The school employee's health record should be accessible to certain administrative personnel and be confidential. The record may consist of several parts and include the results of the medical examinations, chest roentgenograms, laboratory tests, and other examinations. The *first* part of the health record might consist of the health history of the candidate or employee. The health history might be a record of immunization procedures; health habits inventory; record of previous illness; record of serious injuries and operations; irregularities in daily health, such as

<sup>9</sup> American Association for Health, Physical Education, and Recreation. *Fit to Teach*. Washington, D.C.: The Association, 1957, pp. 156-157.

<sup>10</sup> *Ibid.*, pp. 151-156.

headaches, nosebleeds, and diarrhea; dates of the last visit to the family physician and/or dentist and reasons for the visit; and record of illnesses within the immediate family. The health history could be completed before the medical examination.

The *second* part of the health record might include the results of the medical examination by the family physician or designated physician and the results of any laboratory tests by that physician. The second part of the record should be detachable so that it can be kept in the physician's office. The *third* part of the health record might include the results of chest roentgenographic procedures and tuberculin tests. This third part should be detachable. The second and third parts of the record should provide for successive annual results, and thus become a cumulative record. The *fourth* part of the record should be removable for the employee's use and be separated from other parts of the health record. On the fourth part, the employee records data pertinent to illnesses, injuries, operations, and health disturbances occurring since employment. The *fifth* part of the health record contains information about the employee's physical and mental fitness and possible health conditions needing correction following employment. This last part of the health record can be used in conference with the employee if he has a physical or mental health difficulty needing correction. The purpose of the conference would be to encourage the employee to seek correction of the health difficulty.

A standard employee health record can be designed by a school system so that data can be recorded. Suggestions for an employee health record can be obtained from other school districts or local and state health departments. Physicians, counselors, school principals, and employment officials should keep confidential all data concerning the employee's physical and mental health.

The second part of the employee's health record, sent to the family physician, should remain in the physician's office. The physician should determine pertinent data needed by the employment official. These data should be forwarded to the employment official and filed under the confidential records of the employee. If the physician indicates that an employee's physical or mental conditions affect the health of other school personnel and pupils, the employment officer should inform the employee.

## WELFARE PRACTICES

Many school systems have retained outstanding teachers because of welfare practices. Superintendents have been aware that such practices promote a sense of security among school personnel. Some of these practices are sick leave, voluntary group insurance plans, teacher retirement, salary and promotions, continuing contract policy, and tenure.

## SICK LEAVE

Sick leave provides the school employee with a stated length of time when he may be absent from his job because of personal illness or injury, with partial or no loss in salary. The length of time may be stated on the employee's annual contract. Superintendents must establish definite procedures for notifying school officials of absences and dates of return, and school personnel should be informed of these procedures. In some instances, a principal may be notified by the school employee. The principal then either contacts a designated school official who obtains a substitute employee, or the principal has authority to obtain a substitute. In some school systems, officials of the central administrative offices are notified, and they secure a substitute. All school personnel should be informed of these varying procedures regarding the date of return. The procedures may request that the employee submit a certificate when he returns. The certificate is issued by a family physician, or a physician *employed by the board of education; it indicates whether the employee has recovered from illness.* Some school systems require that the employee absent from his job for 3 or more days submit a physician's certificate stating the nature of the illness or injury and whether the employee has fully recovered.

The number of days granted for sick leave varies. Sick leave may be decided by boards of education or by state-wide mandatory regulations. The number of days ranges from 5 to 10. Cumulative sick leave may be available; that is, days of sick leave from the preceding year not used by the employee are extended into the following year as cumulative sick leaves.

Sick leave may need interpretation to school personnel. Sick leave for an illness or injury requiring hospital care and sick leave for a slight illness or injury not requiring medical service differ. Quarantine, dental surgery and treatment, and periods of convalescence from illness may be included in sick leaves. Maternity absence may be included as sick leave, usually without pay. A beginning teacher may need assistance in understanding the conditions under which sick leave is granted and the procedures for notifying school officials about absence and date of return.

## LEAVE OF ABSENCE OTHER THAN PROVIDED THROUGH SICK LEAVE

Leave of absence because of death or illness in the family, a wedding in the family, personal business, attendance at professional education meetings, obligations of an officer to a professional organization, jury duty, emergencies arising within families other than illness or death, and other unusual situations may require that the school employee be absent from



his job. A leave of absence of this sort does not include sabbatical leave, when the teacher is absent from his job for a semester or year. Personal business might include examinations given by a university or college to an employee registered for graduate courses. School personnel should be informed of the conditions under which leave of absence is granted, of procedures to be followed for notification of absence, and of procedures reporting the date of return.

Military service should be included within the leave-of-absence provisions. Boards of education should develop definite policies. Retirement, cumulative sick leave, tenure, salary and promotional arrangements, and type of school position filled by the school employee assigned to military service should be considered by boards of education.

### VOLUNTARY GROUP INSURANCE PLANS

The term "voluntary" has been inserted in the above title because school personnel may choose to join or refuse to join the different types of group insurance plans available to them. The type of insurance plan the school employee wishes to join is left entirely to his own choice and has no effect on the retention of his job. This voluntary decision on the part of the school employee has both advantages and disadvantages.

The term "group" has been placed in the title instead of "individual." Annual premiums for members of a group plan are less expensive than annual premiums for an individual subscriber not a member of a group. In small communities, the number of school personnel in one school district or in a single building may be inadequate for membership in a group insurance plan. In such instances, personnel within several school districts should join one group. Group insurance may provide broader coverage because of fewer exclusions. Shorter waiting periods before benefits become effective constitute another advantage. But there are disadvantages to group insurance. First, benefits are limited to the basic needs of a majority within the group. Second, benefits apply only so long as the employee remains on his job. Third, employees retiring after being members of a group for a given length of time may not be members of a group. Individual insurance, though costly, may offer coverage to meet individual needs not included in group plans.

The following types of voluntary group insurance plans, used by school personnel, will be presented: prepaid hospital services, prepaid medical-surgical services, prepaid hospital and medical services for catastrophic illness, and accident and health insurance (disability).

Plans for prepaid group hospital services usually cover hospital care in semiprivate rooms for a stated length of time; anesthetic materials and services; general nursing care; medications; roentgenographic examinations; use of the operating room; surgical dressings; routine laboratory examinations; obstetrical care, use of the delivery room, and other obstetri-

cal care as provided; provisions of discount if more time is needed than the stated length; and provisions when the subscriber wishes to pay an additional sum for a private room. Some plans for prepaid hospital services include provisions for plaster casts and splints, use of a cystoscopic room, basal metabolism examination, oxygen therapy, electrocardiograms, physiotherapy and hydrotherapy, and emergency room service. The purpose of the plan for prepaid hospital services is to assist a person in paying for hospital care; seldom does the prepaid hospital services plan cover all hospital expenses. Before subscribing to any hospital services plan, the subscriber should be familiar with the services offered by the plan.

Prepaid group medical-surgical services plans are designed to assist the individual in paying for unexpected surgical or medical care. In these plans, the subscriber is informed of the amount of money defraying surgical costs. Medical benefits include surgery of the abdomen; amputation of certain parts of the human body; anesthesia; surgery of the breast, chest, ear, nose, throat, eye, genitourinary tract, joints, ligaments or tendons, rectum, skull, spine or spinal cord, and varicose veins; surgical care for a dislocation and reduction of a dislocation, fracture and treatment of a fracture, goiter, hernia, lacerations, for paracentesis, and tumors; and obstetrics and gynecology. Home and office calls, routine inoculations, and medications given by the physician for the patient not in the hospital may not be included in prepaid medical-surgical services plans.

Some plans for group prepaid hospital and medical-surgical services permit the subscriber to add catastrophic illness endorsement. The catastrophic illness endorsement provides treatment for the following: cancer, polio, leukemia, diphtheria, scarlet fever, rabies, tetanus, spinal meningitis, encephalitis, and tularemia. It broadens the coverage of prepaid hospital and medical-surgical plans. Some private companies and nonprofit organizations, for additional premiums, include this catastrophic illness endorsement.

Group accident and health insurance (disability insurance) is available in a variety of forms. Accident insurance can be purchased separately or can be combined with health insurance. Accident and health insurance assists the insured, when he is unable to work because of illness or injury, by providing him with a portion of his income. The insured receives weekly benefits. Some policies provide partial payment of hospital, medical, and surgical costs. The weekly benefits are estimated by the amount of premium paid. Group and individual plans are offered by private companies.

## RETIREMENT PLANS

Teacher retirement plans vary regarding the benefits received, age when teachers must retire, and annual amount paid by the teacher into the retirement plan. Every state has some form of teacher retirement

plan, and most states have provisions for teachers who become permanently disabled. There is constant need for evaluation of these retirement plans by state education associations, to indicate inadequacies in retirement benefits.

The teacher close to retirement faces many problems. The amount of retirement income and the age when the teacher must retire differ from state to state. The retirement income may lower the former teacher's standard of living, because retirement plans are not geared in a cost-of-living index. Age limit is another problem facing the teacher. With the shortage of teachers, teacher retirement plans might extend age limits so that teachers capable of performing their jobs and having satisfactory physical and mental health could be retained.

Boards of education, adopting gradual retirement plans, have added years to the life of the retired teacher. Whereas retirement means a complete separation of the teacher from his or her job, gradual retirement plans adjust the teacher gradually both emotionally and financially to retirement. Some school systems start the gradual retirement plan at the age of 61, when the plan may voluntarily go into effect. At the age of 65, the gradual retirement plan becomes compulsory. A teacher may decide to accept voluntarily the gradual retirement plan at 61 years of age. She is employed for a 2-year period. She teaches four sixths of the regular school day and is paid four sixths of her regular salary for those 2 years, and after that she is employed for another 2-year period. She teaches one half of the school day and is paid one half of her former salary.

## SALARY AND PROMOTIONS

The school employee's salary influences not only his job performance but also his sense of security. Inadequate salaries force school employees to seek part-time employment outside their school jobs. Nine-month salary plans, lack of policies governing increases in salaries, lack of "single" salary schedules, and the fact that the cost of living is rising faster than teachers' salaries have not made the teaching profession attractive.

Local boards of education and state education departments should establish policies concerning salary schedules so that elementary teachers are paid salaries equivalent to those of secondary teachers. Instructional supervisors and administrators should receive salaries that recognize years of successful teaching experience, competencies on the job, and advanced study. School personnel such as counselors, special education teachers, and health educators or coordinators should be compensated for advanced specialized study needed for the job and the performance of a multitude of tasks. The school nurse should be compensated according to her

professional preparation, her aptitudes in school nursing, and the fulfillment of her role in the total school health program.

A salary schedule permits the school employee to approximate his future salary and be aware of his obligations regarding competencies on the job, advanced study, and meritorious service. Salary increments should be carefully considered by boards of education before decisions are made for "across-the-board" increases, or for advances in salary as rewards for outstanding performances. A school superintendent, before increasing a school employee's salary, should have pertinent information to help him evaluate the employee's services properly.

Promotions need the careful attention of school superintendents and boards of education. Promotional policies designed by school employee committees can do a great deal in promoting *esprit de corps*. Recognition of problems facing the employee, proficiency in handling the job, and efforts to improve the job should be accepted as some of the bases for promotional policies. Meritorious work can be used as a basis for promotion, if instructional positions receive equal recognition. Promotional policies promoted by boards of education need continuous evaluation by employee committees.

### CONTINUING CONTRACT POLICY

The policy of a continuing contract assures the school employee of a position for at least a period of 2 years and allows him to know a year in advance if his services are to be terminated. Some school boards and superintendents feel that school employees should be employed each year for a 2-year period. Knowing that his services terminate at the end of 2 years, the teacher has a full year to seek employment elsewhere. School boards and superintendents have indicated that it is better to have a continuing contract policy and not need it than to need such a policy and not have it.

### TENURE

Tenure promotes security for the school employee. For teachers, tenure removes the possibility of abrupt termination of a job. The teacher is employed for a 2- or 3-year orientation period and, if competent, is assured of permanent employment. When the teacher remains competent, continuing employment can be assured through continuing contract policies, annual contracts, or state tenure laws. If annual contracts are used, the competent teacher is more concerned about next year's salary than whether a contract will or will not be received. States having tenure laws assure permanency of employment unless tenure is ended by court action or by action of the school board after an open hearing. Tenure can have both advantages and disadvantages. Disadvantages of tenure are

evident when teachers, poorly qualified and incompetent, retain their positions because of tenure.

Other welfare practices include legal counseling, teachers' credit unions, Workmen's Compensation Laws, aid for disabled and retired teachers, placement services, and library services for teachers. Welfare practices need constant evaluation but do provide a sense of security among school personnel.

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## THE SCHOOL DAY AND ITS RELATION TO THE PUPIL'S TOTAL HEALTH

A school's philosophy, instructional program, pupil promotion and grading policies, teacher-pupil relations, and organization of the day may directly or indirectly affect the pupil's physical and mental health. The relation between the school day and the pupil's total health has been recognized for a long time. The school day is a division of healthful school living.

Throughout the school health program, physical health has not been separated from mental health. Mental health has many interpretations. In this chapter, mental health will be emphasized rather than freedom from disease, physical defects, and injury.

### SCHOOL'S PHILOSOPHY

The school principal's concepts of elementary and secondary education may dominate a school's philosophy. These concepts can influence the individual philosophies of instructional personnel. They may or may not influence the selection of teaching methods, instructional materials, evaluation instruments, aims of each curricular offering, and the way instruction is organized.

When a principal is oblivious of pupil differences he will emphasize certain subject matter. The preferred subject may not be needed by the student or be worthy of his time and efforts, and may never be used in the student's adult life. The student's beliefs, interests, knowledge, skills, and contributions are ignored when he is placed in an adult-dominated pattern of instruction. Teaching methods are modified to emphasize the desired subject matter. Instructional materials are chosen for their inclusion of specific areas of information. Evaluation instruments are limited to subjective and objective written tests. Finally, the instruction is planned so that knowledge of certain subject matter dominates the total curriculum.

How can this philosophy influence the pupil's total health? His physical health can be impaired. Individual variations within human fatigue levels are not recognized, remediable health defects are ignored, adjustments and modifications in teaching and within the school environment are overlooked, and individual capacities for muscular work are disregarded. The pupil's mental health can also be affected. He has no "sense of belonging," no opportunity for creative expression, and no desire for exploration into skills and knowledge beyond the class limits. He is insecure because his capacities are unknown.

When the philosophy excludes pupil differences, curricular offerings such as health education, art, music, physical education, dramatics, home-making education, industrial arts, and business education are limited. There has been some attempt to combine the best of the basic courses with other curricular offerings so that the student can adjust to his changing environment and face the realities of everyday living.

### DAILY PROGRAM

The principal is responsible for the divisions of the school day. These divisions include time allotment for classes, lunch, physical education, and maintenance of a balance between morning and afternoon activities. Within these divisions, the pupil with nonremediable health difficulties will need greater attention than will other pupils. He will need more time to move from a classroom to the lunchroom, playground, or auditorium.

In the secondary school, the principal is responsible for scheduling health education, art, physical education, industrial arts, homemaking education, music, and business education in addition to the basic courses. If these curricular offerings are scheduled last, the objectives of the curricular offerings, class size, facilities, instructional materials, and teaching methods may be disregarded. Health education classes may be located in a room other than a health teaching laboratory.

Many principals try to attain some degree of balance between the morning and afternoon sessions, if possible. The balance between the morning and afternoon may depend on the type of instructional program in the school. Facilities, number of instructional personnel, student class load, availability of instructional materials, and a city-wide course of study may force a principal to accept a routine pattern in scheduling secondary school classes. In the secondary schools, the principal may schedule the basic courses interspersed with health education, art, physical education, music, and other curricular offerings.

With consolidation of schools, more pupils will use the school bus service. The length of time required of different age groups to ride to and from school, and provisions for special bus service for students engaged in after-school activities, should be considered.

Principals might consider the possibilities of extending the school year to 11 months, providing evening classes for high school students, and team teaching. The school health educator (Chapter 19) might be a valuable asset to team teaching because he can contribute specific, up-to-date subject matter of health education.

## METHODS OF SUPERVISION

The principal's supervisory practices can affect the pupil's total health. Working cooperatively with teachers, the principal can assist teachers to develop a friendly, positive, and constructive school atmosphere that is felt by all pupils. When democratic supervision is apparent, pupil differences are recognized. Cooperative action by the teacher and principal solves pupil problems. The pupil's total health is promoted by joint teacher-principal procedures.

The principal's concepts of supervision will be evident in his treatment of school personnel. When the principal stresses democratic supervision, he will respect the opinions of school personnel, delegate authority and encourage leadership among them, acknowledge meritorious services, and support the leadership of school personnel. In addition to the principal's supervision, there will be supervision by the curriculum consultants or supervisors. These consultants can assist teachers by formal and informal visits and by arranging a conference with teachers as soon as possible after the visit. Consultants and principals can keep cumulative records on all teachers and share the information on these records with teachers. Consultants can encourage creativity among teachers and serve as resource persons. Interclass and school visitations, demonstrations, and workshops afford some of the opportunities when teachers can share their special skills with other teachers.

How do these democratic supervisory practices directed at school personnel affect the pupil's total health? A teacher who experiences supervisory practices that promote self-growth and security will exert every effort to do the best possible teaching job. The teacher will have a "sense of belonging," display leadership, attempt the best in teaching methods, be prepared for daily teaching, recognize pupil differences, and give pupils opportunities to explore their potentialities.

## PUPIL GRADING AND PROMOTION

The types and methods of reporting pupil progress to parents will reflect the principal's and instructional personnel's concepts of grading and promotion. Principal and teachers may have to conform to system-wide policies of grading and promotion that may be satisfactory to some teachers and administrators and unsatisfactory to others. Principals and teachers may wish to acquaint parents with many of the characteristics,



types of behavior, and achievements of their pupils. Teacher study groups, however, may have to be guided by the principal in devising report forms permitting teachers to record some of these types of pupil information. The information might include the pupil's social relations, achievements in curricular offerings, outstanding strong and weak aspects of behavior and characteristics, unusual creative projects, and the teacher's observations of possible physical and mental health difficulties. To record this type of information would be time-consuming for the teacher. A summation drawn from the teacher's anecdotal records and memoranda might be compiled.

The types of symbols used to designate pupil progress in curricular offerings will need to be interpreted to both parents and pupils. A pupil who is unfamiliar with the symbols used to report curricular achievements can be emotionally disturbed when a report card having unfamiliar symbols is handed to him. The types of symbols used and their interpretations vary from school system to school system. The classroom teacher should be especially alerted to acquaint a newly enrolled pupil and his parents with the symbols.

The amount of emphasis placed on grades as a means of measuring pupil success will depend on the philosophy of a school, the concepts of elementary and secondary education held by the principal, the types of instructional programs, recognition of pupil differences by instructional personnel, and other factors. Some elementary schools are de-emphasizing grades and permitting the child to progress into different grade levels as he shows reasonable aptitudes to adjust socially, physically, intellectually, and emotionally to another age group.

Through teacher-parent conferences, there can be teacher explanations of the summation of pupil information, the symbols used in school reporting, and the interpretation of these symbols. A principal might question whether grading and promotion policies should produce the emotional disturbances experienced by some students. Is the difference between an "A" and a "B" grade sufficiently important to stimulate a sudden outbreak of tears, extreme joy, or anger among students? Is the alphabetical or numerical symbol a true indication of the student's gains or losses in social relations, physical and mental health, emotional stability, and intellectual achievements?

## PUPIL CONDUCT

Procedures used by principals and teachers in handling pupil misbehavior will reflect their understanding of pupil differences as well as the factors that influence pupil behavior. These procedures will also show the patience and objectivity of principals and teachers, and their willingness to seek assistance from other school personnel. Many factors within

and outside the school influence pupil behavior. The pupil's home life and social relations, or the teacher's judgment of the pupil's actions, can be underlying causes for pupil misbehavior. Many facts should be obtained and weighed before attempting to punish a student.

The effect of misbehavior on the pupil concerned, on other pupils, on the instructional personnel, and the program must be considered. A group of classmates can shun the pupil who misbehaves. Further punishment may not be necessary. In dispensing punishment, principals and teachers should also be aware of the interpretations of their actions by other school personnel, who may have information to assist them when they are faced with problems of pupil conduct.

### CHARACTERISTICS OF THE TEACHER

The teacher with a clear understanding of her capacities and limitations can have a stabilizing effect on pupils. A teacher of this sort will be able to plan her daily tasks in such a manner that there will be no sense of hurry, tension, or irritating pressure to finish a given task. She will face the unexpected, be elastic in the daily schedule, and, having foresight, be capable of long-term planning. A teacher who is aware of her limitations and capacities will take time to gather materials of instruction and to outline systematically the possible teaching content. She will give students adequate explanations regarding sources of references and subject matter. With such a teacher, students find stability. Guides to self-understanding have been included in the writings of the Hogg Foundation for Mental Health.<sup>1</sup>

The teacher's self-confidence can establish a sense of security among pupils. Self-confidence may be the result of acknowledgment of the teacher's achievement by others, her own satisfaction in accomplishing difficult assignments, and long-term planning. The teacher's self-confidence may encourage students to explore their capacities and to acquire new skills. Self-confidence can assist the teacher to be self-reliant and to face realities.

The teacher should be free from personal problems and pressures exerted by parents or other school personnel. She will then be more alert to the variations in pupil capacities and be aware of differences in the pupils' physical and mental health and in the range of their interests. Instead of being preoccupied with her own problems, she can focus her attention on the pupil. She may be able to observe pupil actions objectively and systematically, and with more deliberation collect evidence pointing to the causes of pupils' actions. A teacher with overwhelming personal problems may not be aware of the differences in pupils' mental health and the range of pupils' interests. The Association for Supervision

<sup>1</sup> Eugene McDonald, Bert K. Smith, and Robert Sutherland. *Self-acceptance*. Austin, Texas: Hogg Foundation for Mental Health, 1962.

and Curriculum Development<sup>2</sup> has stated that a teacher "... who is pre-occupied with himself and his own difficulties is likely to be quite blind to the subtleties of behavior and the feelings of others."

The teacher's ability to manage her personal life is reflected in her performance of school tasks and her ability to get along with pupils, parents, and other school and community personnel. When the teacher cannot budget her finances to pay monthly expenses, financial troubles worry her. When the teacher cannot choose desirable friends, town gossip may make her private life unbearable. When the teacher cannot abstain from overindulgence in alcohol and tobacco, efficiency of teaching performance is lost. The teacher may try to hide her inability to manage her personal life. These weaknesses soon become apparent.

The teacher's sense of humor, courtesy, tact, kindness, patience, understanding, and honesty are revealed during the school day. These characteristics can be foundation stones for building sound mental health among both teachers and pupils, and they can be assets in developing desirable social relations with all age groups. Most persons seek these characteristics in their friends, and the student expects to observe them in teachers. The student will realize the importance of these characteristics as he watches the teacher during the school day. His observations may prompt him to accept the importance of humor, courtesy, tact, kindness, patience, understanding, and honesty in daily life.

## PREPARATION OF INSTRUCTION

The teacher, gathering objective information on the pupils' needs and interests and using the information as a guide to planning instruction, emphasizes instruction focused on these needs and interests. When the student is aware that the teacher has taken considerable time to understand him as an individual and to acquire information about his family and community, he realizes the need for emphasis on certain basic learnings.

The teacher who is well prepared for each assignment in the school day gives the student an opportunity to acquire and use new learning experiences. The student then has a sense of accomplishment. In addition to being well prepared, the teacher should be able to organize her teaching in such a way that every student can daily acquire some specific new information or skill.

Teachers strive to present subject matter logically and concisely, using many types of materials of instruction. For example, the teacher must complete many procedures in order to have one visual aid ready at the

<sup>2</sup> Association for Supervision and Curriculum Development. *Guidance in the Curriculum* (1955 Yearbook). Washington, D.C.: National Education Association, 1955, p. 18.

exact moment in a demonstration. Today's teacher must explain not only by words but also by techniques in the use of many materials. She should have a wide vocabulary so that all students understand the intent of the teaching, because with a limited vocabulary she will have difficulty in conveying the concepts and skills to be learned. The gifted student's learning experiences depend on the teacher's explanations and use of materials.

Teachers should be free to express their concepts as well as the concepts of others; to create new concepts, skills, and materials; and to explore possibilities within learning experiences. Freedom of expression, creativity, and exploration are vital in developing better teaching as well as in stimulating students to widen their horizons of learning and to discover some of their capacities. Common sense and discretion are abandoned when teachers misuse this freedom. Similarly, students can abuse their freedom when their efforts are not continuously guided by teachers.

The creative efforts of teachers should be encouraged by administrative and supervisory personnel. The experienced teacher may fall into a pattern of daily performance with little variation, few opportunities to explore new concepts and teaching methods, and occasional spurts of creativity. Students who come into contact with teachers of this type have no desire to attempt skills or acquire knowledge beyond the class presentation.

There should be some opportunity during the school day for the teacher to witness a student's achievement. A student may be progressing slowly, his achievements may be unnoticed by others, his efforts may be clumsy, and he may acquire limited knowledge. However, the amount of observed student achievement is gratifying to the teacher. There should be an attempt not only to broaden the learning experiences of the gifted child but also to allow the slow learner some degree of success.

Preparation of instruction should provide the teacher with opportunities for daily self-evaluation. During the day, she listens to class discussion, student answers, and questions asked by students. She should question whether the subject matter was well presented, well explained, and meaningful. Continuous self-evaluation will encourage her to seek better teaching methods and new materials of instruction. Self-evaluation may be more critical than evaluation by administrators and other teachers. The teacher, continuously evaluating her daily school tasks and the results of these tasks on students, is aware of her shortcomings. As she seeks ways to overcome these shortcomings, self-evaluation becomes a means of self-improvement. As the teacher's self-improvement continues over the years, students benefit. Self-evaluation should be encouraged by principals and superintendents so that the teacher has numerous opportunities to improve the preparation of instruction.

## PUPIL DIFFERENCES

Teachers should be aware of the range of pupil differences. Health coordinators and educators will hear teachers discuss pupils' academic achievements, intellectual capacities, group relations, and behavior. Little comment, though, may be made about signs of pupil emotional health disturbances, skin infections, nutritional problems, posture conditions, communicable diseases, dental health problems, and vision and hearing difficulties. The health coordinator or educator may ask these questions of teachers. "Does Ruth complain of pain and swelling in her throat?" "Does Sally ask to have questions repeated in class?" "What are Mary's dietary habits at lunch?" "Does Bill have indications of a possible visual difficulty?" "What signs of emotional health problems are observed in Joe's behavior?"

The concepts of the "whole child" include physical and mental health. It may be necessary for the health coordinator or educator to inform teachers of the possible range of pupil health differences. Teachers should understand that academic progress, intellectual capacity, group relations, and individual behavior can indicate certain pupil differences. Other characteristics may be displayed in activities not found within the classroom; for example, indications of desirable mental health may be found in athletic contests. These characteristics may be of such a nature that the teacher with limited understanding of pupil differences may never notice them.

This possible range of pupil differences should include many concepts of the whole child and should not be limited by academic grades and group behavior. Wide variations and many differences within each variation should be accepted as the concepts of the whole child are considered. Pupil differences may be found in pupil achievements, aptitudes, personalities, social tendencies, capacities, interests, motor abilities, behavior, physical growth, mental health, remediable and nonremediable physical health conditions, and other pupil characteristics.

How does the teacher become aware of these pupil differences? Teacher observation is the most likely method. This observation is not casual, hurried, or without purpose, but is continuous, systematic, and informative. Skill in observing pupil differences naturally varies with teachers. Some teachers have been known to observe pupil behavior, conditions, characteristics, and skills unknown to the parent and physician.

When recognizing pupil differences, the teacher must accept the role that the gifted child plays among his classmates. She should be aware of the gifted child's range of aptitudes and behavior as well as his potentialities in acquiring knowledge and skills. Her awareness of the gifted child's potentialities can open unlimited opportunities of learning to the child. Rapport between the child and teacher should be well developed. The

gifted child should feel secure, enthusiastic, and confident of some degree of success as he forges ahead into new learning experiences. Individual conferences between him and the teacher may create learning experiences not available to other class members. Sometimes the gifted child may continue working on a project that the majority of the class members can no longer continue because of their lack of capacities and skills. Among the possibilities in helping the gifted child are enrichment of the regular curriculum, elective courses, rapid advancement, and a wide variety of activities in addition to regular classwork. The gifted child will need encouragement, kindness, patience, recognition for his achievements, and individual attention. The teacher can assist him by being aware of his potentialities, by guiding him continuously, and by providing him with new learning experiences.

### **PUPIL-PUPIL RELATIONS**

Some of the most important experiences of the pupil during the school day concern relations with other pupils. The relations may develop behavior patterns that remain with the pupil the rest of his life. A teacher might use sociograms, storytelling, role playing and sociodrama, and written self-descriptions by pupils to discover isolated pupils, leaders among pupils, and pupils who have made adjustments in their relations with other pupils. Many opportunities are available to the teacher to foster better pupil-pupil relations. First, the teacher might use the term "we" to encourage group cohesion. Second, the teacher should consider many possible ways to handle conflict situations between pupils. Third, there are some situations that the pupils can handle better than the teacher. Fourth, the teacher should accept the fact that there are times when the teacher is a source of guidance but not the leader. Fifth, the teacher must be alert to the formation of pupil cliques. Sixth, the teacher should be aware of pupils who are scapegoats and isolates, and she should try to prevent the formation of adverse group opinion about them. Numerous authors have contributed suggestions to aid teachers in developing sound pupil-pupil relations.

### **TEACHER-PUPIL RELATIONS**

Teacher-pupil relations will be strengthened when the teacher understands the proper balance between the student's feelings, attitudes, values, and appreciation, on the one hand, and his acquisition of knowledge and skills, on the other. The student's behavior may be a translation of his feelings and values gained in the process of acquiring knowledge and skills. The student realizes that his opinions and feelings are important and that

they can be expressed in a permissive emotional climate that eliminates fear, avoids hurry, and evades tensions.

Self-improvement and acceptance of everyday realities are strengthened when desirable teacher-pupil relations are strongly entrenched. Criticism of one's actions is received as a means of self-improvement, whether the criticism is of the teacher or pupil. Failures are viewed by the teacher and pupils as opportunities to work together constructively to improve those situations creating the failures. Realities of everyday experiences are faced squarely. Some problems arising from these realities may need the help of parents. In facing realities, the student should accept the consequences when he breaks the rules of the group, misbehaves, or attempts to set himself above others.

When desirable teacher-pupil relations exist, teachers and pupils have an urge to be creative. In a permissive emotional climate, individuality and creative self-expression go hand in hand. The teacher, recognizing a pupil's desire to be creative, can encourage and guide his efforts into many possible outlets. Students who are encouraged and guided by the teacher will notice the teacher's creative efforts and may provide the impetus for further creative work by her.

## TEACHER'S ORGANIZATION OF THE SCHOOL DAY

Even though a tentative hourly guide and weekly schedule may be accessible to the teacher, the organization of the pupil's daily activities is the responsibility of the teacher. This organization may affect the pupil's total physical and mental health either positively or negatively.

## CHANGE OF CLASS ACTIVITIES

Physiologists have conducted experiments on the rise and fall of human fatigue levels during waking hours. Brain cell activity for mental concentration requires oxygen and nutritional intake and carbon dioxide and waste removal. Muscle cells of all types, when producing work, demand oxygen and nutritional substances for the removal of carbon dioxide and lactic acid. Fatigue results when there is an accumulation of carbon dioxide and lactic acid;<sup>3</sup> the teacher can observe signs of fatigue in a pupil who has worked long at his desk or overexerted himself in muscular work.

A second-grader, seated at a desk-chair combination, has been seated for a half hour. What signs of pupil fatigue might be observed by the teacher? Some of these signs might be the pupil's squirming, stretching, placing his head on the desk top, slumped posture, dangling of feet, resting of his head on the back of the chair, inattentiveness, and moving from the

<sup>3</sup> Charles Best and Norman Taylor. *The Living Body: A Text in Human Physiology* (4th ed.). New York: Holt, Rinehart and Winston, Inc., 1958, pp. 491-492, 515, 478.

desk-chair combination to the floor. A high school student has studied at a library desk for 2 hours without arising. What signs of fatigue might he show? He might rub his eyes, rest his forehead on the palm of one hand, stretch, yawn, assume many sitting postures, and repeat movements such as foot stamping and nail biting. A junior high school student with some preseason athletic conditioning is practicing basketball free-throws. What signs of fatigue might be observed by his physical education teacher as the student attempts his twentieth try? The physical education teacher might observe loss of motor coordination, inaccurate placement of the basketball on the backboard, tendency toward erratic performance, loss of timing, and gradual reduction in completed baskets. These examples have been given to show the effects of fatigue on brain cell activities for mental concentration and muscular work.

After the teacher has recognized these signs of fatigue, what can be done? Children of elementary school age and teenagers should be aware of the onset of fatigue and should practice health habits that replace fatigue with energy. Some children and teenagers pay no attention to warning signals pointing to fatigue. Chronic and nervous fatigue becomes a habitual part of their daily living. Such pupils can be accident prone as well as emotionally unstable and physically ill. They require continuous teacher supervision and should be taught the importance of replacing fatigue with rest. As for teacher supervision, a change of pupil activities might involve changes from sitting to standing to walking postures. Group work might take precedence over individual seated activities. Pupil science experiments might be substituted for assigned arithmetic problems, and big-muscle activities might replace the fine coordinated hand movements required in art projects. There are many ways the teacher can change classroom activities.

Visual and hearing difficulties, the onset of communicable diseases, emotional health problems, nutritional deficiencies, dental health problems, and posture difficulties can hasten human fatigue. Every teacher should be aware that physical and mental health deficiencies create an extra burden on the pupil. The pupil with a health difficulty must supply more energy to the afflicted areas of his body or to other areas that are attempting to compensate for the difficulty. Teachers may have observed the student with a hearing difficulty lean forward tensely in order to hear only a small percentage of what is said.

#### PLACEMENT OF CLASSROOM ACTIVITIES

In order to combat rising human fatigue levels during the school day, the scheduling of classroom activities must be considered. Before the schedule is considered, teachers should be aware of the pupils' energy patterns and fatigue levels, which vary from one pupil to another. Age, bodily growth, sex, nutritional status, endocrine functions, and mental and



physical health status will create variations not only among pupils of one grade level but also among pupils of different grade levels.

Physiologists have given data on how the rise and fall of human fatigue depends on periods of rest and the replacement of fatigue with energy. When should certain classroom activities be included within the school day? Because individual students vary, it may be necessary to consider the fatigue levels of the majority of students in a classroom. We shall assume that the majority of students have had ample sleep during the preceding night, sufficient foods for breakfast and the preceding evening meal, no needless scampering for the morning school bus or other modes of transportation, no early morning undue excitement, adequate fulfillment of all before-school health habits, reasonably few mental and physical health deficiencies, and are within patterns of bodily growth for their ages and sex. We might assume that these students' fatigue levels are rather low at early morning school hours. Therefore curricular offerings requiring muscular work in combination with brain cell activity for mental concentration could be placed in the early morning school hours.

An understanding of the transformation of chemical energy into mechanical energy by muscle fibers and the functions of the central and autonomic nervous systems might assist principals and teachers in the scheduling of curricular offerings in the school day. Human fatigue increases during the day. Periods of rest and the replacement of fatigue with energy tend to diminish the production rate of fatigue. School personnel have tended to place curricular offerings requiring brain cell activity for mental concentration in the early morning school hours and have delegated the afternoon school hours for activities combining muscular activities with mental concentration. The findings of physiologists on the rise and fall of human fatigue have not been considered in the scheduling of curricular offerings in the school day.

## REST AND RELAXATION

Periods of rest and relaxation should be included in the organization of the pupil's daily activities. These periods might occur during the change of classroom activities. Some elementary teachers allow their pupils to take a short afternoon nap after the noonday school meal. The pupils stretch out on light, easily folded rubber mattresses. Other elementary school teachers provide a quiet relaxing period through a "listening hour" of recorded classical music or short dramatizations. It is not uncommon to find children of elementary school age resting their heads on the tops of the desk-chair combinations, following the noonday meal. Some elementary and secondary physical education classes conclude activities with relaxation. A popular relaxation activity of the physical education classes is to have all students lie flat on their abdomens, arms resting on the floor

above their heads, and heads turned to one side. Shoes are removed. Eyes are closed. This relaxation activity is accompanied by a soft waltz melody.

Rest must be provided in the school day for students who have recovered from rheumatic fever and for pupils who have undergone a seizure of grand mal epilepsy. Rest is vital to the health of a pupil returning to school after prolonged illness or recent surgery. Pupils with emotional health problems will also profit from daily rest periods.

At the secondary school level, periods of rest and relaxation are necessary during the surging rush of class activities. Clubs, study halls, library browsing, and lunch periods provide some of this needed rest and relaxation. The student should have opportunities during scheduled class activities to replace fatigue with energy.

The school's daily activities should be organized so that there is little, if any, pressure exerted on the pupil. Homework coordinators might be appointed by principals to aid teachers in planning assignments on a weekly basis. Pressure can be eliminated when teachers recognize pupil differences and do not expect all pupils to have the same pace of learning. Pressure can be avoided when sufficient time is allotted for the school noonday meal, for moving from one part of the school building to another location, and for changing activities within a classroom. Pressure can be controlled when parents, teachers, and pupils work together in developing school policies for grades, promotions, and pupils' meritorious service. Pressure can be erased when competition is controlled and offers few awards.

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**PART III**

**HEALTH EDUCATION**

## HEALTH INSTRUCTION IN ELEMENTARY AND SECONDARY SCHOOLS

The purpose of health education is to interpret the research of scientific discoveries into information that can be easily understood and be available to all people. In this way, people, either as individuals or as members of a family, community, or nation, can understand their health needs and how to solve them. It is apparent from the following data that school health education has not been permitted to reach the American people.

1 of every 10 Americans has some form of mental illness.

95 to 99 percent of American youth has dental caries.

30 of every 100 school children have visual problems.

6 million Americans have some form of hearing difficulty.

50 million Americans are overweight.

4 of every 5 school children have an inadequate breakfast or skip breakfast.

4 million cases of measles are reported annually.

40 million Americans are infected with tubercle bacilli.

5 million Americans are alcoholics.

\$25 billion is needed to purify polluted drinking water.

7000 municipal sewage-treatment plants are needed.

9,400,000 nonfatal injuries occur to Americans annually.

95,000 Americans are killed in accidents each year.

5 million serious home accidents are reported annually.

350,000 accidents cause permanent disability to Americans annually.

We are facing a crucial test of health education in our elementary and secondary schools. Much of this test depends on the interpretations of school health education. Commonly accepted, school health education should provide experiences "... favorably influencing understandings, attitudes, and practices relating to individual, family, and community health."<sup>1</sup>

<sup>1</sup> "Health Education Terminology." *Journal of Health, Physical Education, and Recreation*, 33:21-22 (November 1962).

We might ask these questions. Is the content (subject matter) directed to broad concepts of individual, family, and community health? Are many possible types of understandings, attitudes, and practices included? Does the content involve the student to such an extent that it becomes a personal matter? Does the student take action to improve his health, the health of his family, and health of his community? Does the student reach some stage of optimal physical and mental health through the content of health education? Does the student question, re-examine, and reappraise previously learned practices, beliefs, and information? Is the content compatible with the health problems of our daily and future lives?

### THE CRUCIAL TEST—ELEMENTARY SCHOOLS

In our primary and intermediate grades of the elementary school, we have need for a complete change in the content of health education. Much as health practices need to be stressed, the subject matter accompanying these practices must be up to date and valid. The "why" and "what" of health education must have as much emphasis as the "how." Correct dental health practices can be acquired by the pupil only when dental health units on various dental diseases and defects occurring at each age level receive emphasis in health education of the elementary school. Positive mental health behavior must be understood, attitudes must be developed to foster positive behavior, and correct methods must be practiced, not by incidental but by direct instruction. Obesity in children can be reduced if information about scientific nutrition and opportunities to practice sound dietary practices are available in the home and in the school. Children can discover that diseases are caused by bacteria, viruses, and other causative agents of diseases. They can see bacteria on microscopic slides. They can observe how bacteria are spread when one child coughs close to an uncontaminated Petri plate. Colonies of bacteria, carried by droplet infection, will appear on the Petri plate after appropriate heat levels and other procedures have been applied.

Our children come into contact with community health problems such as water pollution, insect-borne diseases, and rabies. Do they have an understanding of these problems, or do they become victims of these community health problems? Diabetic, epileptic, palsied, cardiac involved, dystrophic, speech defective, crippled, and vision and hearing defective children are in our elementary schools. Has the time not come that children learn to accept and assist persons with these nonremediable conditions? Family life education can start in the primary grades and continue with different units of instruction as boys and girls reach the later stages of their growth and development. It is somewhat ridiculous to present the basic facts of menstrual hygiene to high school girls when most of the

girls have been menstruating for at least four years. Children overhear many health misconceptions accepted by adults. Is it not possible that children in the intermediate grades can evaluate some of these misconceptions?

We have seen children practice self-preservation procedures in the event of fire and natural disaster. Is it not possible that different self-preservation procedures in the event of man-made disaster might be understood, accepted, and practiced as a part of daily living? Many forms of accident prevention are significant parts of the instructional programs of youth groups such as the Boy Scouts, Girl Scouts, and the like. However, we find very little American Red Cross First Aid taught in the primary and intermediate grades of the elementary school.

## THE CRUCIAL TEST—SECONDARY SCHOOLS

There has been some change in the health education content of the secondary schools. As the professionally prepared "major" in health education joined the secondary school's teaching staff, she designed her own units of instruction, which differed from accepted units. In most instances, the teacher of health education or the school health educator discovered that textbooks on secondary school health education had not kept pace with the changes in health education. The school health educator had then replaced the units on integumentary, skeletal, muscular, digestive, circulatory, respiratory, excretory, nervous, reproductive, and endocrine systems with units of instruction from the 13 areas of health education. These areas resulted from studies and investigations of the health needs and interests of secondary school youth.

Some of these units were obesity and weight control, smoking and lung cancer, mental illness, engagement and its problems before marriage, quackery, allergies, marijuana and barbiturates, alcoholism, and group voluntary insurance. In a unit entitled, "Alcohol," the emphasis was no longer placed on the central nervous system but on the social and psychological causes and effects of alcoholism. In a unit on obesity and weight control, the content no longer stressed the digestive system. On the contrary, the emphasis was placed on "Recommended Dietary Allowances" and weight reduction procedures recommended by physicians. These school health educators had the foresight to include other units, such as air pollution, radiation sickness, infectious hepatitis, health problems of Latin and South America, periodontal diseases of youth, immunization and medical detection procedures, health careers, and health problems of newly wedded couples. Why have these changes occurred? As the school health program revealed health needs and interests of secondary school youth, the content of health education changed.

## HEALTH EDUCATION AS RELATED TO THE SCHOOL HEALTH PROGRAM

As the third part of the total school health program, health education is the *most* important part. The main purpose of our elementary and secondary schools is to provide constructive teaching that changes the individual, not only intellectually, but also socially, morally, physically, and emotionally. As a teacher of a single subject-matter field, the school health educator can measure, to some degree, these changes of the pupil's health practices, attitudes, knowledge, and status. Particularly is this possible in secondary schools, where health education is regularly scheduled, meeting five class periods a week, during designated semesters. Not only can the school health educator discover the existing pupil health practices, attitudes, and knowledge at the beginning of the semester, but she can also reveal the pupil's health practices, attitudes, and knowledge during and at the close of the semester. Much as school health services contributes to the total school health program, health education must be accepted as the most important part of the program. It is health education that provides the "why," "what," "how," and the tools to measure changes that have occurred to the pupil—intellectually, socially, morally, physically, and emotionally through the health education content.

## PRINCIPLES OF HEALTH EDUCATION

There are six basic principles of health education. First, health education is concerned with *everyday living* as it affects the individual, his family, and his community. For many years, health education consisted of the life stories of Edward Jenner, Marie Curie, Robert Koch, Louis Pasteur and other persons who contributed to man's well-being. Although such life stories emphasized the contributions of these persons, it was difficult to accept that the life stories were the content of health education. More recently, the content of health education has been tied in with certain unrelated curriculum topics. Many pupils who were reading these life stories or participating in unrelated topics had significant health problems; yet teachers had emphasized the life stories and the unrelated curriculum topics. They had ignored health information that could have been used to solve the pupil's difficulties. Health education deals not only with the health problems of the individual but also with those of the family and of the pupils within a classroom and school, and with those of the community and the nation as well. These problems are not of the past but of the present and future.

Second, health education deals in *specific facts* and not in generalities. These facts are the results of experimentation, research, and well-founded conclusions of school health education, medicine, dentistry, public health,



nursing, related biological and sociological sciences, engineering, nutrition, and pharmacy. The purpose of health education is to interpret the experimentations, research, and conclusions so that the facts can be easily understood and reach all students. Pseudo information, misleading and ambiguous statements, and disorganized and meaningless subject matter have no place in health education. Health behaviors are acquired through continuous practice and an acceptance of the reasons for acquiring the behaviors. Students' attitudes are favorably influenced toward these health behaviors because the behaviors are supported by many facts, compiled and evaluated without bias, and scientifically accurate.

Third, health education is *positive in its approach*. Elementary and secondary school students want guidance to direct them into healthful effective living. Health education does not moralize or coerce but provides reliable factual evidence so that the student can form positive opinions to guide his actions. This statement can be illustrated when the unit of instruction is *smoking*. This unit, taught in the seventh or eighth grade, can include some of the investigations on the relation of smoking to lung cancer. The Portland, Oregon, study has revealed that inclusion in health education of information on the relation of smoking to lung cancer *does* reduce the amount of smoking among high school students.<sup>2</sup> Other studies<sup>3</sup> have revealed that secondary school boys and girls started smoking between the ages of 13 and 16. If smoking can be reduced by inclusion of specific facts concerning smoking and lung cancer at the high school level, is it not possible that some of these facts can reduce the probability of smoking among junior high school students at an age when smoking begins? Most school health educators are aware that cigarette advertising is directing its appeal to persons who have not become regular smokers. Many of these potential smokers are in the secondary schools. Valid health information that is positive in its approach may be able to redirect a developing nonbeneficial health behavior into one that will be beneficial.

Fourth, health education has a *five-pronged attack*. It attempts to improve the pupil's physical and mental health status, erase the pseudo information, eliminate attitudes retarding improvement of the pupil's health status, promote health practices that benefit him, and stimulate continuous interest in health education. Specific and valid health facts are necessary. These facts applied to everyday living can strengthen the individual's health practices, attitudes, and interests so that health becomes

<sup>2</sup> Daniel Horn, Frederick A. Courts, Robert M. Taylor, and Erwin S. Solomon. "Cigarette Smoking among High School Students." *American Journal of Public Health*, 49:1497-1512 (November 1959).

<sup>3</sup> Jessie Helen Haag and Nelda Garcia. "Smoking Habits of Secondary School Pupils." *Health Education Journal*, 25:9-10 (May 1962).

V. J. Sallak. "A Study of Smoking Practices of Selected Groups of Junior and Senior High School Students in Public Schools in Erie County, New York." *Journal of School Health*, 31:307-313 (November 1961).

a "state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."<sup>4</sup> Second-graders may reduce their dental health problems by practicing correct tooth brushing procedures after eating, having a daily diet that omits highly fermentable carbohydrates, having access to fluoridated drinking water, and visiting their family dentist as prescribed. Chapter 16 illustrates this statement in the lesson, "Why I Take Care of My Teeth."

Fifth, health education depends on the *teacher's enthusiasm and interest*. There are elementary and secondary school teachers who consider health education of no significant value; they believe it to be subservient to traditional subjects and to physical education. Even though the following statement was given many years ago, it applies today.<sup>5</sup>

Health instruction too frequently is playing second fiddle not only to traditional school subjects but also to the closely related fields of physical education and competitive sports. This role of secondary importance for health instruction is fixed in the minds of many school people as well as in the point of view of the public. Even some teachers of health and physical education look upon their health classes as a relatively unimportant assignment.

Some school personnel have never realized that the teacher's lack of enthusiasm and interest may be caused by several factors. First, many elementary school classroom teachers, and teachers assigned health education, in secondary schools, have very little acquaintance with the subject matter. Second, for this reason the teacher feels extremely inadequate and insecure when faced with areas and units of health education. Third, the same teacher receives little or no assistance from supervisors or consultants of health education, who have received major preparation in this field, because these supervisors or consultants are *seldom* found in the elementary and secondary schools. Fourth, many of these teachers may feel that health education, because it has no subject matter, to their knowledge, warrants no time allotment in the schools. Fifth, subject matter in health education may be repulsive to some teachers because they cannot accept that health problems exist among individuals, families, and communities. Lastly, some teachers consider all health problems the sole concern of physicians, local health departments, or federal agencies. If the teacher is disinterested and apathetic, health education has no opportunity to accomplish its purposes. Sixth, health education is based on *objective information* about the individual pupil's physical and mental health status and his health practices,

<sup>4</sup> "Constitution of the World Health Organization," p. 3. *Chronicle of the World Health Organization*, 1:29-43 (1947).

<sup>5</sup> National Education Association, Research Bulletin. *Personnel and Relationships in School Health, Physical Education, and Recreation*. Washington, D.C.: National Education Association, October 1950, p. 108.

attitudes, interests, and knowledge. How this objective information is gathered, how it is used, why it is necessary for health education, and by whom and when it is compiled will be presented in Chapter 14. To be meaningful to the pupil, health education must satisfy his many health needs and interests. A course of study, a single textbook on health, and a committee of teachers totally unaware of pupil health needs and interests cannot provide meaningful health education. The life story of Robert Koch undoubtedly has very little meaning to four-graders of whom one third have measles and are absent from school. The integumentary system of the human body has little significance to high school students whose dating has forced on the students the question: To use or not use alcoholic beverages? Objective information is found in statistical evidence of dental health problems of school-age children. Does not this evidence emphasize the need for dental health units in the elementary and secondary schools? Studies of growth and development indicate age levels at which to teach menstrual hygiene, boy-girl relations, dating, problems of engagement, and birth of a baby. Pupil health records show an increasing need for inclusion of units on posture, skin infections, and weight control. Local health departments indicate the increase of venereal diseases among secondary school youth. Results of tuberculin testing reveal the need for tuberculosis education. School health educators use objective information to improve continuously the content of health education.

## ELEMENTARY SCHOOL HEALTH EDUCATION— PRIMARY GRADES

The supervisor or consultant in health education is often asked, "Why is health education important in the primary grades?" Health education has many *purposes* at these age levels. Health education continues the parental instruction of desirable health and safety practices, and it promotes the beneficial health and safety practices not taught by parents. It fosters understandings of the basic health and safety practices. It tries to eradicate undesirable health and safety practices. It emphasizes that desirable health and safety practices are necessary for future well-being. It encourages the child to accept some of his responsibilities for healthful and safe living. It reveals to the child that other children have both desirable and undesirable health and safety practices. It stresses health problems and accident hazards of these age groups so that the child learns to protect himself from some of the health problems and accident hazards. It tries to foster acceptance of family physicians, dentists, and other professional health workers coming into contact with the child. It attempts to eradicate some of the fears instilled into the child by parental misconceptions about health.

The *competencies* resulting from the health education content are nu-

merous. If we use nine of the 13 areas of health education, many competencies can be developed. Some of these competencies are:

1. Having a daily bath, shower, or sponge bath
2. Keeping the hair combed
3. Dressing appropriately according to the weather
4. Cleaning the fingernails and washing the face and hands throughout the day
5. Having clean, pressed clothes each day
6. Using toilet facilities properly
7. Brushing the teeth correctly
8. Having adequate sleep
9. Knowing how to relax during the day
10. Measuring height and weight
11. Sitting and standing correctly
12. Taking proper care of toothbrush, brush and comb, and glasses
13. Preventing colds and sore throats
14. Receiving adequate vaccinations
15. Preventing the spread of diseases
16. Using handkerchiefs properly when sneezing or coughing
17. Blowing the nose correctly
18. Accepting health problems of others
19. Learning to understand health habits
20. Controlling a nosebleed
21. Providing American Red Cross First Aid for simple emergencies
22. Crossing streets and intersections correctly
23. Getting on and off school buses without accidents
24. Preventing accidents in the classroom
25. Practicing the basic self-preservation procedures in the event of disaster
26. Preventing accidents on the school playground
27. Practicing safe fire drills
28. Adjusting to school life
29. Controlling emotions
30. Being a member of a group
31. Taking turns
32. Sharing and cooperating with others
33. Assuming certain responsibilities
34. Being courteous and thoughtful
35. Liking foods from the Essential Four Food Groups
36. Participating in school noonday meals
37. Having desirable table etiquette
38. Selecting a well-balanced meal
39. Reducing amounts of candy and other sweet foods
40. Accepting the family physician, dentist, and other professional health workers
41. Drinking purified water
42. Accepting new brothers and sisters in the family

43. Understanding the birth of chicks and other small animals of the animal kingdom
44. Understanding how new trees and plants develop

With these competencies as a guide, what subject matter in health education might be included for the primary grades? Subject matter for units mentioned in this chapter can be found throughout this text. Nine of the 13 areas of health education will be used for some of these *units*. A unit is a series of lessons built around a central topic.<sup>6</sup>

1. *Area:* Care of all parts of the human body
  - Unit:* Cleanliness
  - Unit:* Rest
  - Unit:* Six-year molar and care of my new teeth
  - Unit:* Types of teeth and injuries to my teeth
  - Unit:* Sleep
  - Unit:* Sitting and standing posture
  - Unit:* Clothes for daily weather and activities
2. *Area:* Prevention of diseases to all parts of the human body
  - Unit:* Colds
  - Unit:* Spread of diseases
  - Unit:* My vaccinations
  - Unit:* Sore throats
3. *Area:* Nonremediable health conditions
  - Unit:* Health problems of some of my friends
4. *Area:* American Red Cross First Aid
  - Unit:* Nosebleed
  - Unit:* First Aid for simple emergencies
5. *Area:* Safety education
  - Unit:* Pedestrian safety
  - Unit:* School safety
  - Unit:* School bus safety
  - Unit:* Fire drills at school
  - Unit:* Disaster drills at school
  - Unit:* Playground safety
6. *Area:* Mental health
  - Unit:* Adjustment to school life
  - Unit:* Control of my emotions
  - Unit:* Respect for others
  - Unit:* Cooperation and sharing with others
  - Unit:* My responsibilities at school
  - Unit:* Courtesy and thoughtfulness
7. *Area:* Nutrition education
  - Unit:* Essential Four Food Groups

<sup>6</sup> Jessie Helen Haag. "Suggested Health Education Units, Grades 1-12." Prepared for the Texas Education Agency, Austin, 1958.

- Unit:* Table etiquette
- Unit:* School noonday meals
- Unit:* Well-balanced meals
- Unit:* Fruits and vegetables

8. *Area:* Community health

- Unit:* Community helpers in health
- Unit:* Purified drinking water

9. *Area:* Family life education

- Unit:* New brothers and sisters
- Unit:* Reproduction in animals that I own
- Unit:* Pollenization in plants that I grow<sup>†</sup>

How much *time* should be allotted to health education in the primary school day? For many years, educators and physicians have recommended that health education be allotted the same amount of time as that given to other major fields of learning. To strengthen health and safety practices that are fundamental to the child's well-being now and in the future, health education must be given as much time for its content as other subject-matter fields have been given. Also, direct health education has proved to be far more effective than incidental teaching on a "hit or miss" basis. Thus the elementary school teacher in the primary grades needs to consider specific time set aside in each school day for health education. Her decision will depend on whether she considers health education and the competencies to be developed on an equal basis with other major fields of learning.

## ELEMENTARY SCHOOL HEALTH EDUCATION— INTERMEDIATE GRADES

Health education can be challenging and realistic in the intermediate grades if the *purposes* of health education are accepted. Health education strengthens desirable health and safety practices by developing new health attitudes and knowledge. It answers the child's questions of "why" about the new content of health education. It reveals why parents and teachers stress desirable health and safety practices for the younger child. It recognizes that the child has more individualized health problems than children previously had. It accepts that some girls reach puberty early and that boys have specific personal health problems. It encourages the boy and girl to become more aware of the individual differences in children's health problems. It reveals accident hazards and community health problems that previously were of little concern to the boy and girl. It stimulates the desire for more valid health information. It promotes the responsibility for certain health problems that formerly were considered largely the concern of parents and the teacher.

<sup>†</sup> *Ibid.*

The *competencies* resulting from health education in the intermediate grades are numerous. If we use 11 of the 13 areas of health education in developing units, many competencies may result. Some of these competencies are:

1. Developing reasonably acceptable posture in sitting, standing, walking, lying, and working
2. Providing proper care of the feet
3. Choosing correct socks and shoes
4. Preventing dental caries
5. Developing good habits of personal cleanliness
6. Learning to relax
7. Avoiding fatigue caused by overexertion
8. Preventing pimples, boils, and blackheads
9. Taking proper care of the hair
10. Providing proper care of the nails
11. Preventing eye injuries and diseases
12. Avoiding ear injuries and infections
13. Understanding the causative agents of diseases
14. Preventing measles and mumps
15. Preventing chicken pox and scarlet fever
16. Preventing whooping cough
17. Having tuberculin tests
18. Accepting and assisting the epileptic, diabetic, palsied, cardiac involved, dystrophic, speech-defective, crippled child, and the child who is defective in vision or hearing
19. Giving proper care to wounds
20. Providing proper care for shock
21. Recognizing poisonous snakes and providing first aid for snake bites
22. Giving proper first aid for household poisoning
23. Giving proper artificial respiration
24. Assembling a first-aid kit
25. Recognizing poisonous insects and providing first aid for insect bites
26. Avoiding community accident hazards
27. Practicing bicycle safety at all times
28. Preventing accidents caused by improper handling of guns
29. Promoting accident prevention while on vacation
30. Promoting accident prevention during all types of camping
31. Preventing drowning by common water safety procedures while swimming, boating, and skin diving
32. Preventing fires at home
33. Preventing household poisoning accidents
34. Getting along with others
35. Being honest
36. Demonstrating good sportsmanship
37. Respecting parents and teachers

38. Respecting rights and property of others
39. Developing self-control and self-discipline
40. Controlling anger
41. Assuming responsibilities at home
42. Planning ahead and having daily time schedules
43. Developing courage
44. Controlling weight
45. Planning and preparing simple meals with assistance
46. Preparing a ready-to-eat breakfast
47. Choosing foods with a wide variety of nutrients
48. Avoiding being underweight
49. Preventing nutritional deficiencies
50. Liking milk and milk products
51. Avoiding misuse of coffee, tea, and sweetened soft drinks
52. Trying new foods
53. Avoiding polluted water
54. Preventing the spread of diseases by proper disposal of garbage
55. Preventing rabies in human beings and animals
56. Being aware of the need for adequate sewage treatment
57. Appreciating and supporting the functions of the local health department
58. Avoiding self-medication
59. Evaluating common health fallacies
60. Accepting responsibilities at parties
61. Developing social etiquette in the presence of other boys and girls and adults
62. Practicing essentials of menstrual hygiene
63. Practicing essentials of personal hygiene for young boys
64. Avoiding strangers who invite boys and girls in their car
65. Recognizing marijuana, heroin, bromides, and barbiturates
66. Reporting persons attempting to give or sell narcotics

With these available competencies, what subject matter in health education might be included for the intermediate grades? Eleven of the 13 areas of health education will be used for some of these units.<sup>7</sup>

1. *Area:* Care of all parts of the human body

*Unit:* Standing and sitting posture

*Unit:* Walking, working, and lying posture

*Unit:* Dental caries and pyorrhea (Chapter 15)

*Unit:* Malocclusion and effects of diet on my teeth (Chapter 15)

*Unit:* Care of my feet

*Unit:* Relaxation and fatigue

*Unit:* Pimples, boils, and blackheads

*Unit:* Eye defects, infections, and injuries (Chapter 15)

*Unit:* Ear injuries and infections

2. *Area:* Prevention of diseases to all parts of the human body

*Unit:* Causative agents of diseases



*Unit:* Measles (Rubeola and Rubella) and mumps

*Unit:* Chicken pox and scarlet fever

*Unit:* Whooping cough and tetanus

*Unit:* Tuberculin tests and chest x-rays

3. *Area:* Nonremediable health conditions

*Unit:* Common nonremediable health conditions

4. *Area:* American Red Cross First Aid

*Unit:* Wounds

*Unit:* Shock

*Unit:* Poisonous snakes and first aid

*Unit:* Poisonous insects and first aid

*Unit:* Artificial respiration

*Unit:* Household poisoning and first aid

*Unit:* First-aid kits

5. *Area:* Safety education

*Unit:* Bicycle safety

*Unit:* Gun safety

*Unit:* Vacation safety

*Unit:* Camping safety

*Unit:* Common water safety procedures for swimming, boating, and skin diving

*Unit:* Fire prevention

*Unit:* Household accidents

6. *Area:* Mental health

*Unit:* Friends and getting along with others

*Unit:* Honesty

*Unit:* Courage

*Unit:* Good sportsmanship

*Unit:* Rights and property of others

*Unit:* Self-control and self-discipline

*Unit:* Respect for parents and teachers

*Unit:* Tolerance

*Unit:* Responsibilities at home

*Unit:* Daily time schedules and planning ahead

7. *Area:* Nutrition education

*Unit:* Nutrients in my daily diet

*Unit:* Nutritional deficiencies

*Unit:* Calories and my best weight

*Unit:* Menu planning

*Unit:* Breakfast

*Unit:* Milk and milk products

*Unit:* What about coffee, tea, and sweetened soft drinks?

8. *Area:* Community health

*Unit:* Water and water-borne diseases

*Unit:* Sewage treatment and garbage disposal

Unit: Rabies

Unit: Local health department

9. Area: Consumer health

Unit: Self-medication and nostrums

Unit: Common health fallacies

10. Area: Family life education

Unit: Social etiquette at parties

Unit: Menstrual hygiene for girls (Chapter 15)

Unit: Personal hygiene for boys

11. Area: Misuse of alcohol, tobacco, narcotics, and other stimulants and depressants

Unit: Illegal narcotics and certain stimulants and depressants

As for *time allotment*, there exist many recommendations from professional societies. The American Association of School Administrators<sup>8</sup> recommends that (1) time be set aside in the school day for health teaching, (2) this teaching should not be dependent on indefinite occasions, and (3) emphasis on health should be as great as it is in any other subject field. The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association<sup>9</sup> has stated:

Health is a basic and major objective of education and is fundamental to the present and future welfare of the nation; *nothing is more important and nothing should be allowed to interfere with the time the teacher should devote to health.*

The National Conference for Cooperation in Health Education<sup>10</sup> emphasized direct health instruction with this statement:

Since the needs and interests of pupils in the elementary grades vary from day to day, the exact amount of time needed for health education cannot be exactly stipulated. The time allotted should be at least equal the time devoted to other major areas of the curriculum.

## JUNIOR HIGH SCHOOL HEALTH EDUCATION

It is possible that health education as a single subject-matter field, regularly scheduled throughout a semester, may be completely missing in the junior high school curriculum. Increased emphasis on the biological sciences, mathematics, and foreign languages is partly the cause of this

<sup>8</sup> American Association of School Administrators. *Health in Schools* (Twentieth Yearbook). Washington, D.C.: National Education Association, 1951, pp. 143-144.

<sup>9</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education* (4th ed.). Washington, D.C.: National Education Association, 1948, p. 225.

<sup>10</sup> National Conference for Cooperation in Health Education. *Suggested School Health Policies* (3d ed.). Chicago: American Medical Association, 1956, p. 12.

mission. In other instances, physical education may take precedence over health education, or physical education is considered health education. In some schools, there is no differentiation between health education and physical education. These schools have never realized that health education is a subject-matter field completely separate from physical education. A unit on tuberculosis which takes five health education class meetings has no relation to volleyball, square dancing, or archery. So-called "health" on a rainy day when physical education classes cannot use outdoor facilities, incidental health teaching on a hit-or-miss basis, and curriculum juggling of two periods of "health" and three periods of physical education a week reveals school personnel's disregard of the junior high school student's need for health education.

In the junior high school, regularly scheduled health education courses should be taught by professionally prepared teachers of health education or school health educators. Most teachers assigned health education in the junior high school have not been "majors" in the single subject-matter field of health education. The assigned secondary school teacher completed the state education department's teaching certification requirements in physical education, general science, social studies, or homemaking education. Because of this situation, school nurses have attempted to qualify as teachers of health education. They have found that they do not have the minimum requirements for the secondary school teaching certificate and do not have the subject-matter concentration of health education. Thus nurses and most teachers have had little or no preparation in the single subject-matter field of health education. The situation can be rectified only with the employment of professional teachers of health education. It is inconceivable how unqualified school or community personnel are permitted to teach the comprehensive units in the 13 health education areas to impressionable junior high school students.

The purposes of health education in the junior high school relate to the basic needs of adolescents. Health education strengthens the student's desirable health practices, attitudes, and knowledge and develops additional health practices, attitudes, and knowledge that promote effective healthful living. It involves the student in a personal manner, revealing to him health practices, attitudes, and knowledge that are desirable and undesirable. It encourages the student to take action to solve some of his health problems, with appropriate parental and teacher guidance. It fosters a careful examination by the student of the health practices and attitudes of other adolescents and adults. It includes everyday health problems of the adolescent and does not exclude problems that may be unpopular to the student or unfamiliar to certain parental groups. It stimulates the student to seek valid health information when challenged to defend his health practices, attitudes, and knowledge. It probes into basic facts so that the student begins to realize the scope of health educa-

tion. It forces him to accept and evaluate specific health problems that are controversial. It reveals sources of information needed in the student's evaluation of controversial health problems. It discloses community and national health problems that were of no previous concern to the student.

Numerous *competencies* result from health education in the junior high school. If we use 12 of the 13 areas of health education in developing units, many competencies emerge. Some of these competencies are:

1. Preventing acne, impetigo, and ringworm
2. Having reasonably acceptable posture in sitting, standing, walking, lying, and working
3. Preventing eye and ear infections and injuries
4. Having appropriate personal grooming
5. Preventing periodontal diseases
6. Making arrangements for medical and dental appointments
7. Preventing influenza and polio
8. Using measures to eradicate tuberculosis
9. Understanding some of the scientific evidence about lung cancer and smoking
10. Preventing rheumatic fever
11. Avoiding exposure to syphilis and gonorrhea
12. Understanding the need for medical care of the patient with heart diseases
13. Eradicating fears and misconceptions about diabetes, epilepsy, and cerebral palsy
14. Completing satisfactorily Junior and Standard American Red Cross First Aid courses
15. Practicing self-preservation procedures in the event of man-made and natural disasters
16. Practicing accident prevention in school activities
17. Promoting accident prevention at home
18. Practicing recreational safety
19. Promoting accident prevention on farms and ranches
20. Scheduling time, work, and play so that there is adequate time for work and recreation
21. Being aware of many adolescent emotional health problems
22. Knowing from whom assistance can be obtained for emotional health problems
23. Selecting foods that satisfy the daily dietary needs
24. Preventing obesity through regulated caloric intake, exercise, and medical care
25. Avoiding dietary habits that promote malnutrition
26. Avoiding food fads
27. Evaluating food fallacies
28. Selecting foods that are not carriers of diseases
29. Being aware of influences on daily dietary habits

30. Understanding the problems associated with food allergies
31. Selecting food, milk, and meat that have been inspected
32. Understanding the importance of environmental sanitation procedures
33. Accepting the significance of purified water
34. Avoiding insect-borne diseases
35. Cooperating in the control of communicable diseases
36. Evaluating advertising of health products
37. Avoiding health fads and cults
38. Disproving health fallacies
39. Selecting health services wisely
40. Recognizing and avoiding all forms of quackery in the healing arts
41. Having daily exercise to promote physical well-being
42. Understanding the health problems of the arthritic
43. Understanding the problems associated with glaucoma
44. Having satisfactory wholesome boy-girl relations
45. Dating rather than going steady with one person
46. Accepting the growth changes that occur to boys
47. Having worthy home membership
48. Avoiding stimulants and depressants such as caffeine and tranquilizing drugs
49. Avoiding the use of barbiturates, bromides, and benzedrine
50. Avoiding the use of tobacco
51. Compiling factual information on alcoholism

It is possible that some of the competencies mentioned for the intermediate elementary school-age boy or girl might be added to the competencies in the junior high school. This may be necessary when the health needs and interests of pupils of 10, 11, and 12 years of age have been overlooked. What subject matter might be included for the junior high school student? Twelve of the 13 areas of health education will be used for some of these units.<sup>11</sup>

1. *Area:* Care of all parts of the human body
  - Unit:* Acne, impetigo, and ringworm
  - Unit:* Acceptable or poor posture?
  - Unit:* Personal grooming
  - Unit:* Periodontal diseases
  - Unit:* My health responsibilities
2. *Area:* Prevention of diseases to all parts of the human body
  - Unit:* Influenza and polio
  - Unit:* Tuberculosis
  - Unit:* Lung cancer and smoking
  - Unit:* Rheumatic fever
  - Unit:* Syphilis and gonorrhea
  - Unit:* Medical care of the patient with heart diseases

<sup>11</sup> Haag, *op. cit.*

3. *Area:* Nonremediable health conditions
  - Unit:* Diabetes
  - Unit:* Epilepsy
  - Unit:* Cerebral palsy
4. *Area:* American Red Cross First Aid
  - Unit:* Junior American Red Cross First Aid
  - Unit:* Standard American Red Cross First Aid
5. *Area:* Safety education
  - Unit:* Man-made disasters
  - Unit:* Natural disasters
  - Unit:* School safety
  - Unit:* Home safety
  - Unit:* Recreation safety
  - Unit:* Farm and ranch safety
6. *Area:* Mental health
  - Unit:* Do I have adequate time for work and play?
  - Unit:* Adolescent emotional problems
  - Unit:* Sources of assistance for my emotional health problems
7. *Area:* Nutrition education
  - Unit:* Selection of foods for my daily dietary needs
  - Unit:* Obesity and weight control
  - Unit:* Malnutrition
  - Unit:* Food fads
  - Unit:* Food fallacies
  - Unit:* Food-borne diseases
  - Unit:* Food allergies
  - Unit:* Inspection of food, milk, and meat
8. *Area:* Community health
  - Unit:* Environmental sanitation
  - Unit:* Insect-borne diseases
  - Unit:* Rodents and rat-borne diseases
  - Unit:* Pollution of water supplies
9. *Area:* Consumer health
  - Unit:* Advertising of health products
  - Unit:* Health fads and cults
  - Unit:* Health fallacies
  - Unit:* Quackery in the healing arts
  - Unit:* Health careers
10. *Area:* Adult health problems
  - Unit:* Exercise and health
  - Unit:* Arthritis
  - Unit:* Glaucoma
11. *Area:* Family life education
  - Unit:* Adolescent and the parent
  - Unit:* Boy to young man

*Unit:* Boy-girl relations

*Unit:* Dating or going steady?

12. *Area:* Misuse of alcohol, tobacco, narcotics, and other stimulants and depressants

*Unit:* Caffeine and benzedrine

*Unit:* Barbiturates, bromides, and tranquilizers

*Unit:* Smoking

*Unit:* Alcoholism: national problem

As for *time allotment*, the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association<sup>12</sup> and the National Conference for Cooperation in Health Education<sup>13</sup> have recommended regularly scheduled health education. These recommendations include at least two semesters of five periods a week in the junior high school. These two semesters should "... receive credit equal to that given for courses in other areas."<sup>14</sup>

## SENIOR HIGH SCHOOL HEALTH EDUCATION

Health education in the high school can be provocative and highly significant, but its content must be directed at the health needs and interests of young adults. In addition, health education should be taught in regularly scheduled health education courses meeting five periods a week for designated semesters. As in the junior high school, health education should be taught by professionally prepared teachers of health education or school health educators. These teachers have received "major" preparation in health education.

The *purposes* of health education in the high school are different from those of the junior high school. Health education in the senior high school motivates the student to evaluate his health attitudes, practices, and knowledge and the health attitudes, practices, and knowledge of his adult associates. It forces the student to reach definite decisions about his health habits. It stimulates the student to take action for the promotion and protection of his health. It seeks to develop informed adults who can cope with daily and future health problems. It deals specifically with the health problems of the student's future occupation, marriage, and family. It encourages the student to take action regarding his family's health problems. It stimulates the student to do research and to be critical of contemporary health problems. It forces the student to accept his role in community, national, and international health. It makes the student

<sup>12</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, *Health Education* (5th ed.). Washington, D.C.: National Education Association, 1961, p. 124.

<sup>13</sup> National Conference for Cooperation in Health Education, *op. cit.*, pp. 12-13.

<sup>14</sup> *Ibid.*

aware that health education is a continuous process of learning experiences throughout life. It provides opportunities for an enriched curriculum in health education not contemplated in the past.

Competencies resulting from high school health education are numerous. It is possible that some of the competencies mentioned at the junior high school level may need to be added to the senior high school competencies. When regularly scheduled health education courses are omitted at the junior high school level, competencies in health education seldom are developed. If the 13 areas of health education are used in developing units, these competencies differ from the competencies of the junior high school. Some of these competencies are:

1. Evaluating and improving individual health practices, attitudes, and knowledge related to personal health
2. Seeking correction of dental health problems
3. Taking action to promote family health
4. Preventing infectious hepatitis
5. Being aware of the complications resulting from infectious mononucleosis
6. Recognizing the seven danger signals of cancer
7. Evaluating advertising and quackery as related to cancer.
8. Assuming responsibilities for early detection of cancer and for further cancer education
9. Avoiding exposure to all venereal diseases
10. Understanding the problems of multiple sclerosis, muscular dystrophy, cystic fibrosis, and Parkinson's disease.
11. Understanding the problems associated with heart diseases
12. Completing satisfactorily the Advanced American Red Cross First Aid course
13. Understanding the effects of thermonuclear bombing in the event of enemy attack
14. Being aware of accident rates in various occupations
15. Practicing accident prevention in occupations held while attending school and during school vacations
16. Eradicating fears and misconceptions concerning mental illness
17. Being aware of the agencies and services for the mentally ill
18. Understanding the significance of nutrition in the treatment of diseases and alcoholism, to pregnancy, and to other health problems
19. Practicing adequate sanitation in the preparation of meals
20. Seeking reliable information about cholesterol, diets, and other controversial nutrition topics
21. Avoiding crash diets and diets of food faddists
22. Cooperating with local community efforts to control air pollution
23. Understanding the problems related to radiation sickness
24. Supporting the functions of the state health departments and the United States Public Health Service



25. Being aware of the services of nonofficial health agencies
26. Being aware of the need for professionally prepared personnel in the numerous health professions
27. Acquainting associates with school health education
28. Selecting hospital, medical-surgical, and disability insurance that satisfies individual and family needs
29. Selecting a family physician and dentist, medical and dental specialists, nurse, and a hospital
30. Buying health products wisely
31. Assuming responsibilities for medical detection and immunization procedures
32. Avoiding adult obesity
33. Exercising daily and promoting the health of the cardiovascular system
34. Accepting responsibilities during the period of engagement
35. Realizing that promiscuous sexual relations do not promote a happy marriage
36. Understanding the development of the unborn child during pregnancy and the birth of the baby
37. Accepting obligations in marriage
38. Understanding the problems of newly wedded young couples
39. Being aware of the physical, social, economic, and psychological factors involved with alcoholism
40. Recognizing that today's social drinker can become the future alcoholic
41. Understanding the problems associated with the treatment of alcoholics
42. Avoiding the use of alcoholic beverages
43. Avoiding the use of marijuana, heroin, and cocaine
44. Recognizing the legal and illegal uses of opium and its derivatives
45. Understanding the health problems involved with drug addiction
46. Being aware of the criminal aspects associated with drug addiction
47. Recognizing the need for international malaria eradication
48. Understanding the health problems of Canada, and Latin, Central, and South America
49. Being aware of the scope and diversity of international health problems
50. Accepting health problems encountered by space travel
51. Accepting health education as a continuous process of learning experiences

Units from the 13 areas of health education will be used for the subject matter for the above-mentioned competencies. Some of these units are:<sup>13</sup>

1. *Area:* Care of all parts of the human body  
*Unit:* Improvement of my personal health

<sup>13</sup> Haag, *op. cit.*

- Unit:* Adult dental health problems
  - Unit:* Fluoridation of drinking water supplies
  - Unit:* Promotion of my family's health
2. *Area:* Prevention of diseases to all parts of the human body
    - Unit:* Infectious hepatitis and infectious mononucleosis
    - Unit:* Cancer (Chapter 16)
    - Unit:* Venereal diseases
  3. *Area:* Nonremediable health conditions
    - Unit:* Multiple sclerosis, muscular dystrophy, cystic fibrosis, and Parkinson's disease
    - Unit:* Coronary thrombosis and other heart conditions
  4. *Area:* American Red Cross First Aid
    - Unit:* Advanced American Red Cross First Aid course
    - Unit:* Civil defense first-aid procedures
  5. *Area:* Safety education
    - Unit:* Thermonuclear bombing
    - Unit:* Occupational safety
  6. *Area:* Mental health
    - Unit:* Mental illness
    - Unit:* Agencies and services for the mentally ill
  7. *Area:* Nutrition education
    - Unit:* Nutrition as related to the treatment of diseases and alcoholism, to pregnancy, and to other health problems
    - Unit:* Sanitation in meal preparation
    - Unit:* Controversial nutrition topics
    - Unit:* Crash diets and food faddism
  8. *Area:* Community health
    - Unit:* Air pollution
    - Unit:* Radiation sickness
    - Unit:* State health departments and the United States Public Health Service
    - Unit:* Nonofficial health agencies
  9. *Area:* Consumer health
    - Unit:* Voluntary health insurance
    - Unit:* Selection of a physician, dentist, nurse, and hospital
    - Unit:* Wise consumer of health products
  10. *Area:* Adult health problems
    - Unit:* Medical detection and immunization procedures
    - Unit:* Adult obesity and exercise
  11. *Area:* Family life education
    - Unit:* Engagement and its significance
    - Unit:* Marriage and my obligations
    - Unit:* Pregnancy and birth of the baby
    - Unit:* Problems of newly wedded young couples

12. *Area:* Misuse of alcohol, tobacco, narcotics, and other stimulants and depressants
  - Unit:* Physiological and psychological factors related to alcoholism
  - Unit:* Social and economic factors related to alcoholism
  - Unit:* The alcoholic and his treatment (Chapter 16)
  - Unit:* Marijuana, heroin, and cocaine
  - Unit:* Legal and illegal use of opium and its derivatives
  - Unit:* Problems of drug addiction
13. *Area:* International health
  - Unit:* Malaria
  - Unit:* Health problems of our neighbors to the north and south of the United States
  - Unit:* Significant international health problems
  - Unit:* Health in space travel

As for *time* allotment, at least two semesters of five periods a week in the senior high school are recommended. These recommendations come from the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association<sup>16</sup> and the National Conference for Cooperation in Health Education.<sup>17</sup> These two semesters of health education should "... receive credit equal to that given for courses in other areas."<sup>18</sup> Many school personnel are not aware that in a 1950 nation-wide study of health education in secondary schools, credit in secondary school health education was counted toward graduation in 44 states.<sup>19</sup>

During 1949 to 1950, a nation-wide survey of 52.1 percent of the 1446 institutions of higher education disclosed these institutions' acceptance of health education for college-entrance credit. Eighty percent of the institutions accepted credit in health education as a college-entrance unit when health education was a separate course in high school. When health education was taken for one or two semesters as a separate subject-matter field, it was preferred by most colleges to health education combined with physical education.<sup>20</sup>

<sup>16</sup> Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education* (5th ed.), p. 124.

<sup>17</sup> National Conference for Cooperation in Health Education, *op. cit.*, pp. 12-13.

<sup>18</sup> *Ibid.*

<sup>19</sup> H. F. Kilander. *Health Instruction in the Secondary Schools: An Inquiry into the Organization and Administration*, Pamphlet No. 110. Office of Education, Federal Security Agency. Washington, D.C.: Government Printing Office, 1951, pp. 19-20.

<sup>20</sup> H. F. Kilander. "Health Education as a College Entrance Unit." *Journal of School Health*, 21:149 (May 1951).

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## DIRECT HEALTH INSTRUCTION

Health education is meaningless when there is no attempt within elementary and secondary schools to clarify and evaluate its contributions. These contributions influence not only the pupil's health status but also his health practices, attitudes, interests, and knowledge. To determine whether these contributions are constructive or of little value, direct health instruction must take priority over other curriculum patterns. *Time must be set aside during the school day and subsequent school days for health education so that the pupil health needs and interests can be discovered and satisfactorily fulfilled.* This is direct health instruction.

Six principles of health education were given in the last chapter. The sixth principle dealt with objective information about the individual pupil's mental and physical health status and health practices, attitudes, interests, and knowledge. This objective information could become the basis of determining *which* competencies and units, within the 13 areas of health education, should take top priority of teaching. It is possible that some of the top-priority competencies and units will be controversial topics.

## CONTROVERSIAL TOPICS

Units or topics of health education become controversial when they are misunderstood and not accepted. In some elementary and secondary schools, few if any questions are raised about the "so-called" controversial health topics or units, some of which are alcohol, mental illness, smoking, venereal diseases, voluntary health insurance, dating, boy-girl relations, engagement, menstrual hygiene, quackery, and fluoridation of drinking water. School board members, administrative personnel, members of the Parent-Teachers Association, and instructional personnel must be carefully oriented regarding these controversial topics or units. In order to gain community support for the inclusion of these topics, the health coordinator or health education supervisor must fully acquaint

community personnel with the content, the methods of teaching, the materials of instruction, and the responsibilities of parents. The principal's approval, of course, should be obtained before the teaching of a controversial topic or unit. The procedures for orienting school and community personnel and the procedures for obtaining the approval of the principal will be presented in the next chapter.

## TEACHER RESPONSIBILITIES

Every elementary school classroom teacher and school health educator should be acquainted with her responsibilities previous to health instruction. Fourteen of these responsibilities will be listed. The teacher should show evidence of:

1. Building student-teacher rapport
2. Respecting student opinions
3. Being sensitive to youth's problems
4. Being positive and direct in guiding the formulation of student opinions
5. Having courage to teach specific facts and to face the realities of student problems
6. Having an "air of understanding" so that students will feel free to ask for teacher-pupil conferences
7. Being honest
8. Omitting intimidation and sarcasm
9. Admitting that there are student questions the teacher desires parents to answer
10. Admitting that the teacher may not have all the specific facts but will be willing to gather further information
11. Keeping detailed notes on specific facts
12. Keeping a record of student questions regarding controversial topics
13. Remaining as the discussion leader
14. Avoiding sensational statements and pseudo information

## GROWTH AND DEVELOPMENTAL PATTERNS

Certain physical characteristics, behaviors, and interests appear among boys and girls as they progress through different stages of growth and development. Some of these characteristics, behaviors, and interests are indicative of what the specific content of health education should be at the time the changes take place in the pupil's growth and development.

Between the ages of 11 and 14, the girl reaches her menarche—first menstrual period. Thus a unit on menstrual hygiene, as a part of health education, would be most appropriate. Acne is often reported among teenagers. A unit on skin infections would assist many a teenager suffering from acne. The acne not only mars the facial appearance but also changes

the teenager's personality. The shedding of the deciduous teeth and eruption of the permanent teeth can create innumerable dental health problems when there is little or no professional dental care. Severe malocclusion, previous to the pupil's entry into junior high school, can cause extreme personality conflicts. The rapid growth of the adolescent boy presents many health problems that relate to his health practices and to his relations with girls. A unit on boy-girl relations in health education has significant meaning to the boy. Many health practices associated with good grooming need to be developed between 11 and 13 years, because after boys and girls leave childhood they begin to accept responsibility for their personal appearance.

Other evidence of the influence of the pupil's growth and development on specific health education content:

Primary grades	<i>Area:</i> Mental health	<i>Unit:</i> Adjustment to school life
Intermediate grades	<i>Area:</i> Nutrition education	<i>Unit:</i> Nutritional deficiencies
Grade 7	<i>Area:</i> Adult health problems	<i>Unit:</i> Exercise and health
Grade 9	<i>Area:</i> Misuse of alcohol, tobacco, etc.	<i>Unit:</i> Smoking
Grade 11	<i>Area:</i> Consumer health	<i>Unit:</i> Wise consumer of health products

School health educators have accepted the different stages of the pupil's growth and development as definite criteria for the selection of specific health education units.

## NEEDS AND INTERESTS

Previously, it was stated that direct health instruction is based on pupil needs and interests. What are these needs and interests? Why are they important in choosing health education content? How can they be found? Once found, how can the needs and interests be used?

The results of compiled objective information gathered from the pupil's physical and mental health status (what is he like?), his health practices (what does he do?), his health attitudes (what does he believe?), his health interests and his health knowledge (what does he know?)—these are the pupil needs and interests indicating the health education content. Much of this objective information comes from the total *school health program*.

Why should the teacher be aware of the pupil's health needs and interests? In order to influence the pupil's health practices, attitudes, interests, and knowledge as well as to improve his health status, the teacher

## SOME SOURCES TO DISCOVER THE PUPIL'S HEALTH NEEDS AND INTERESTS

PART OF THE SCHOOL HEALTH PROGRAM	WHERE DISCOVERED	TYPE OF INFORMATION
<b>PHYSICAL AND MENTAL HEALTH STATUS</b>		
SCHOOL HEALTH SERVICES	<ol style="list-style-type: none"> <li>1. School personnel's systematic and continuous observations</li> <li>2. Health record               <ol style="list-style-type: none"> <li>a. History</li> <li>b. Results of medical examination</li> <li>c. Results of dental examination</li> <li>d. Results of immunization and disease detection procedures</li> <li>e. Results of follow-through</li> <li>f. Results of screening of vision, hearing, nutritional status, and posture</li> </ol> </li> <li>3. Emergency Care Record</li> </ol>	<p>Signs of visual difficulties, hearing difficulties, emotional health problems, communicable diseases, skin infections, nutritional deficiencies, posture conditions, dental health problems, nonremediable conditions, other health conditions and diseases (Chapter 2)</p> <p>Pupil health history of diseases, habits, illnesses, operations, emotional disturbances</p> <p>Remediable and nonremediable health conditions, diseases, emotional problems</p> <p>Remediable and nonremediable dental defects and diseases</p> <p>Smallpox vaccination; immunization for diphtheria, measles, whooping cough, typhoid, tetanus, polio; tuberculin tests; "hoister" doses</p> <p>Home visit by nurse; parental procedures to seek correction of pupil's remediable health conditions</p> <p>Visual and hearing difficulties, nutritional deficiencies, posture conditions</p> <p>Accidents and illnesses</p>
HEALTHFUL SCHOOL LIVING A. ENVIRONMENTAL FACTORS	<ol style="list-style-type: none"> <li>1. Accident hazards</li> <li>2. Unsanitary school facilities</li> </ol>	<p>Types of accidents, location of accidents, fire hazards, accidents caused by faulty building construction</p> <p>Food and water-borne diseases, skin infections, other communicable diseases</p>



B. SCHOOL NUTRITION C. COMMUNITY RESOURCES	Dietary habits at noonday school meals Co-workers of official and nonofficial groups	Signs of nutritional deficiencies Information not recorded in elementary and secondary schools
HEALTH EDUCATION	Teacher's observations	As given in school health services
SCHOOL HEALTH SERVICES	HEALTH PRACTICES	
	1. Teacher's observations	Pupil's actions regarding visual difficulties, hearing difficulties, emotional health problems, nutritional deficiencies, posture conditions, dental health problems, skin infections, <i>nonremediable conditions</i> , other health conditions and diseases
	2. Follow-through	Pupil's and parents' actions in home during pupil's illness and convalescence; seeking correction of remediable health conditions
	3. Immunization Record	Parental and pupil actions regarding type and frequency of immunizations
	4. Emergency Care Record	Accident proneness and types of illnesses
HEALTHFUL SCHOOL LIVING A. ENVIRONMENTAL FACTORS B. SCHOOL NUTRITION C. SCHOOL DAY	Teacher's observations Teacher's observations Daily school activities	Accident proneness, actions during fire and disaster drills, housekeeping and sanitation procedures Dietary habits, posture while seated, tooth brushing, hand washing, table manners Actions during pupil's relations with other pupils, particularly emotional health problems
HEALTH EDUCATION	1. Teacher's observations	Care of all parts of the human body, prevention of diseases and injuries, dietary habits, boy-girl relations, disaster procedures

## SOME SOURCES TO DISCOVER THE PUPIL'S HEALTH NEEDS AND INTERESTS (Cont.)

PART OF THE SCHOOL HEALTH PROGRAM	WHERE DISCOVERED	TYPE OF INFORMATION
	2. Pupil demonstrations 3. Pupil surveys 4. Pupil rating scales 5. Pupil checklists 6. Parent-teacher conferences 7. A.R.C. First Aid and safety education skills 8. Standardized health practices measuring devices (Chapter 22)	As No. 1 As No. 1 As No. 1 As No. 1 Pupil health habits regarding sleep, exercise, dietary habits, etc. Correct or incorrect procedures As No. 1
HEALTH ATTITUDES		
SCHOOL HEALTH SERVICES	1. Teacher-pupil conferences 2. Teacher-parent conferences 3. Follow-through 4. Health counseling 5. Screening procedures	Pupil's response when encouraged to seek correction of remediable health conditions Parent's willingness to seek correction of remediable health conditions As No. 1, 2 As No. 1, 2 As No. 1, 2
HEALTHFUL SCHOOL LIVING	1. Teacher listening to pupil conversations	Pupil's opinions, superstitions, fears, misconceptions
A. SCHOOL DAY	2. Sociodrama	As No. 1
HEALTH EDUCATION	1. Teacher-guided discussions	Pupil's opinions, superstitions, fears, misconceptions



# SOME SOURCES TO DISCOVER THE PUPIL'S HEALTH NEEDS AND INTERESTS (Cont.)

PART OF THE SCHOOL HEALTH PROGRAM	WHERE DISCOVERED	TYPE OF INFORMATION
HEALTH KNOWLEDGE		
HEALTH EDUCATION	1. Teacher-made objective and subjective tests	Pupil's incorrect, ambiguous, out-of-date health information As No. 1 Pupil's fund of information As No. 3 As No. 3
	2. Standardized health knowledge tests (Chapter 22)	
	3. Teacher-guided discussions	
	4. Oral response to teacher's questions	
	5. Panels and debates	

must discover the pupil's *existing* health status, practices, attitudes, interests, and knowledge.

The chart on pages 234 to 238 provides several possible sources to discover the elementary or secondary pupil's health needs and interests. These sources are taken from the school health program as presented in this text. The first part of the chart discloses sources of the pupil's physical and mental health status. The second part reveals sources indicating the pupil's health practices. The third part lists sources of the pupil's health attitudes. The fourth part is concerned with sources disclosing the pupil's health interests. The fifth part deals with sources revealing the pupil's health knowledge.

## RESULTS OF COMPILED PUPIL INFORMATION

When the elementary school teacher and school health educator are aware of sources of pupil information and utilize them, how can the compiled information be used to determine the health education content? As the elementary teacher and school health educator utilize the sources, a compilation of positive and negative findings for each pupil appears. Some of the positive and negative findings are indicated for the pupil's physical and mental health status. Other positive and negative findings occur as health practices, attitudes, interests, and knowledge. When the positive and negative findings for pupils of a classroom are listed, some of the findings appear with greater frequency. Positive findings, repeatedly occurring, should indicate health education units needing less emphasis. Negative findings, with many frequencies, should reveal health education units taking top priority in the instruction. These units indicate the health education content or subject matter.

When the top-priority units have controversial subject matter, the elementary teacher and school health educator should accept other noncontroversial top-priority units to be taught at the beginning of the school semester or year. The controversial top-priority units can be taught later in the school semester or year when the teacher has the principal's approval for including the controversial units and the teacher is better acquainted with students.

The information gathered from the pupil's physical and mental health status (what is he like?), his health practices (what does he do?), his health attitudes (what does he believe?), and his health knowledge (what does he know?) are the "real" health needs. Pupil's health interests are not the same as "real" pupil's health needs. Often teachers believe that the pupil's health interests should be satisfied before the "real" pupil health needs. The teacher's compilation of the negative findings of the pupil's "real" health needs discloses the health education content necessary to satisfy the pupil's health needs. Once the content is determined, then, the pupil's health interests can be used to add other health content.

## SUGGESTED HEALTH EDUCATION UNITS, GRADES 1-12

AREA	ELEMENTARY SCHOOL			JUNIOR HIGH SCHOOL		SENIOR HIGH SCHOOL
	PRIMARY	INTERMEDIATE	GRADE 7	GRADE 9	GRADE 11	
1. CARE OF ALL PARTS OF THE HUMAN BODY	Cleanliness Six-year molar Types and care of my teeth Rest Sleep	Standing and sitting posture Walking, lying, and working posture Care of my feet Dental caries and pyorrhea Malocclusion Relaxation and fatigue Pimples, boils, and blackheads Care of the hair Care of the nails Eye injuries, infections, and defects <sup>1</sup> Ear injuries, infections, and defects	Acceptable or poor posture Good grooming	Acne, impetigo, and ringworm Periodontal diseases My health responsibilities	Improvement of my personal health Adult dental health problems and fluoridation Family's health	
2. PREVENTION OF DISEASES	Colds Spread of diseases My vaccinations Sore throats	Causative agents of diseases Measles and mumps Chicken pox and scarlet fever	Influenza and polio Tuberculosis Rheumatic fever	Lung cancer and smoking Syphilis and gonorrhea Medical care of patient with heart diseases	Infectious mononucleosis and infectious hepatitis Cancer <sup>1</sup> Venereal diseases	

3. NONREMEDIAL HEALTH CONDITIONS	Health problems of some of my friends	Whooping cough and tetanus Tuberculin tests and chest x-ray Some of the non- remediable health conditions	Diabetes	Epilepsy Cerebral palsy	Multiple sclerosis, muscular dys- trophy, cystic fibrosis, and Parkinson's disease Coronary throm- bosis and other conditions
4. AMERICAN RED CROSS FIRST AID	Nosebleed First aid for simple emergencies	Wounds Shock Poisonous snakes Insect bites Artificial respiration Household poison- ing First-aid kits	Junior American Red Cross First Aid	Standard American Red Cross First Aid	Advanced Ameri- can Red Cross First Aid Civil defense first- aid measures
5. SAFETY EDUCATION	Pedestrian School School bus Fire drills at school Disaster drills at school Playground	Bicycle Gun Vacation Camping Common water safety procedures Home fire prevention Household accidents	Natural disasters Recreation School	Man-made disasters Home Farm and ranch Note: Driver Edu- cation taught as separate course	Thermonuclear bombing Occupational

## SUGGESTED HEALTH EDUCATION UNITS, GRADES 1-12 (Cont.)

AREA	ELEMENTARY SCHOOL			JUNIOR HIGH SCHOOL		SENIOR HIGH SCHOOL
	PRIMARY	INTERMEDIATE	GRADE 7	GRADE 8	GRADE 9	GRADE 11
6. MENTAL HEALTH	Adjustment to school life Control of emotions Respect for others Member of a group My responsibilities at school Courtesy and thoughtfulness Cooperation and sharing	Friends and getting along with others Honesty Sportsmanship Rights and property of others Self-control and self-discipline Tolerance Responsibilities at home Daily time schedules Courage	Scheduling work and play	Adolescent emotional health problems Sources of assistance for emotional health problems	Mental illness Agencies and services for the mentally ill	
7. NUTRITION EDUCATION	Essential Four Food Groups Table etiquette School noonday meals Well-balanced meals Fruits and vegetables	Calories and weight Menu planning Breakfast Nutrients Nutritional deficiencies Milk and milk products What about coffee, tea, sweetened soft drinks?	Selection of foods for my daily dietary needs Malnutrition Food fads Food fallacies Food-borne diseases	Obesity and weight control Food allergies Inspection of food, milk, and meat	Nutrition as related to treatment of diseases and alcoholism and to pregnancy Sanitation in meal preparation Controversial nutrition topics Crash diets and food faddists	



8. COMMUNITY HEALTH	Personnel promoting healthful community Purified drinking water	Water and water-borne diseases Sewage treatment and garbage disposal Rabies Local health department	Pollution of water supplies Insect-borne diseases	Rodents and rat-borne diseases Environmental sanitation	Air pollution Radiation sickness State health departments and U.S.P.H.S. Nonofficial health agencies
9. CONSUMER HEALTH		Self-medication and nostrums Common health fallacies	Health fads and cults Health careers	Health fallacies Quackery in healing arts <sup>1</sup> Advertising of health products	Voluntary health insurance Selection of a physician, dentist, and hospital Wise consumer of health products
10. ADULT HEALTH PROBLEMS			Exercise and health	Arthritis Glaucoma	Medical detection and immunization procedures Adult obesity and exercise
11. FAMILY LIFE EDUCATION	New brothers and sisters Reproduction in animals Reproduction in plants	Social etiquette at parties Menstrual hygiene for girls <sup>1</sup> Personal hygiene for boys	Adolescent and parents	Boy to young man Boy-girl relations Dating	Engagement Marriage Pregnancy and birth of baby Newly wedded young couples

## SUGGESTED HEALTH EDUCATION UNITS, GRADES 1-12 (Cont.)

AREA	ELEMENTARY SCHOOL		JUNIOR HIGH SCHOOL		SENIOR HIGH SCHOOL	
	PRIMARY	INTERMEDIATE	GRADE 7	GRADE 8	GRADE 9	GRADE 11
12. MISUSE OF ALCOHOL, TOBACCO, NARCOTICS, ETC.		Illegal narcotics and certain stimulants and depressants	Caffeine and benzedrine Alcoholism: a national problem	Smoking Barbiturates, bromides and tranquilizers	Alcohol and alcoholism <sup>1</sup> Marijuana, heroin, and cocaine Legal and illegal use of opium and its derivatives Problems of drug addiction	
13. INTERNATIONAL HEALTH					Malaria Health problems of our neighbors International health problems Health in space travel <sup>2</sup>	

<sup>2</sup> Jessie Helen Haag. "Suggested Health Education Units, Grades 1-12." Prepared for the Texas Education Agency, Austin, 1958.

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## CONTENT WITHIN HEALTH EDUCATION UNITS

In the previous chapter, sources to discover pupil health needs and interests were given. From these sources the elementary school teacher and the school health educator can determine the health education content to be taught. This content must be outlined for every unit and lesson so that it becomes meaningful to the student. In order to outline the content, the teacher should understand the areas of health education, units within *each* area, and lessons within *a* unit. In this chapter areas and units will be discussed, and in the following chapter, Chapter 16, lessons will be presented.

### AREAS OF HEALTH EDUCATION

An area of health education pertains to a specific phase of health education. It is broad in content and may have many divisions or units. Some areas, as may be expected, are more appropriate in the secondary school than in the elementary school. There are 13 areas of health education:

1. Care of all parts of the human body
2. Prevention of diseases to all parts of the human body
3. Nonremediable health conditions
4. American Red Cross First Aid
5. Safety education
6. Mental health
7. Nutrition education
8. Community health problems
9. Consumer health
10. Adult health education
11. Family life education
12. Misuse of alcohol, tobacco, narcotics, and other stimulants and depressants
13. International health

The titles of some of the areas may need explanation:

**Nonremediable health conditions**—recognition, acceptance, and availability of medical care for conditions caused by malfunctions or defects of the human body

**Safety education**—recognition and avoidance of hazards causing disability or death in modern living

**Nutrition education**—science of nutrition and improvement of daily dietary habits to ensure wise selection and use of food

**Community health problems**—environmental sanitation and services of agencies promoting health

**Consumer health**—wise selection of health products and services and the agencies concerned with the control of these products and services

**Adult health education**—recognition and alleviation of certain health problems confronting adults

**Family life education**—problems associated with the student's sex adjustment during his growth and development and ranging from simple matters of personal health to the complicated physical, social, psychological, and moral factors promoting a successful marriage and family relations

The area of Nutrition Education might contain the following units or divisions. Each unit or division could have many items of content related to the central topic of the unit or division. There is no attempt to include all the units of Nutrition Education. No particular unit is outlined completely. In a later section of this chapter, complete outlines of subject matter within units are given.

#### AREA: NUTRITION EDUCATION

- |             |            |   |
|-------------|------------|---|
| <i>Unit</i> | <i>I</i>   | Essential Four Food Groups  |
| <i>Unit</i> | <i>II</i>  | Recommended Dietary Allowances  |
| <i>Unit</i> | <i>III</i> | Selection of Foods Based on the Essential Four Food Groups and Recommended Dietary Allowances   |
| <i>Unit</i> | <i>IV</i>  | Carbohydrates <ul style="list-style-type: none"> <li>A. Sources of carbohydrates</li> <li>B. Carbohydrate-rich foods</li> <li>C. Effect of diets deficient in carbohydrates</li> <li>D. Carbohydrates in the daily diet</li> <li>E. Daily caloric intake</li> </ul> |
| <i>Unit</i> | <i>V</i>   | Proteins <ul style="list-style-type: none"> <li>A. Conditions determining the amount of proteins</li> <li>B. Sources of proteins</li> <li>C. Amino acids</li> <li>D. Complete and incomplete proteins</li> <li>E. Effects of diets deficient in proteins</li> </ul> |

- Unit VI Fats in My Diet
- A. Essential fatty acids
  - B. Sources of fats
  - C. Functions of fats in my diet
- Unit VII Water and Fiber
- A. Water losses and replacements
  - B. Importance of water as a body regulator and as a tissue-building material
  - C. Fiber and its importance
  - D. Foods containing fiber
- Unit VIII Mineral Elements
- A. Necessity of mineral salts in the regulation of body processes
  - B. Mineral elements
    1. Amounts needed in daily diet
    2. Sources of mineral elements
    3. Diets deficient in mineral elements
      - a. Calcium
      - b. Phosphorus
      - c. Iron
      - d. Iodine
  - C. Mineral supplements—are they needed?
- Unit IX Vitamins
- A. Importance of vitamins in my daily diet
  - B. Vitamin C—ascorbic acid
    1. Foods containing vitamin C
    2. How does the human body use vitamin C?
    3. Effects of diets lacking vitamin C
    4. Water-soluble vitamin C
  - C. Water-soluble or B-complex vitamins
    1. Thiamine (vitamin B-1)
      - a. Importance of thiamine in my daily diet
      - b. Foods containing thiamine
    2. Riboflavin (vitamin B-2)
      - a. Effects of diets lacking riboflavin
      - b. Foods containing riboflavin
    3. Niacin (nicotinic acid)
      - a. Importance of niacin in my daily diet
      - b. Foods containing niacin
    4. Other B-complex vitamins and their importance
  - D. Fat-soluble vitamins
    1. Vitamin A
      - a. Foods containing vitamin A
      - b. Effects of diets deficient in vitamin A
    2. Provitamin A

3. Vitamin D

a. Foods containing vitamin D

b. Effects of diets deficient in vitamin D

E. Vitamin E

F. Vitamin K

G. Antivitamins

Unit X Daily Diet Based on Wise Selection of Nutrients

Unit XI Constipation and Its Relation to the Daily Diet

Unit XII Obesity

A. What is obesity?

B. Factors influencing weight

C. Caloric intake of child, adolescent, and adult

D. Causes

E. Disadvantages

F. Family physician and treatment of obesity

G. Crash diets, reducing fads, and quackery

Unit XIII Underweight

A. Disadvantages of excessive underweight

B. Characteristics

C. Causes

D. Prescribed diet of physician

Unit XIV Influences upon Our Dietary Habits

A. Improvement of staple foods

B. Varieties of menu planning

C. Proper cooking methods and conservation of certain nutrients

D. Trends in American dietary habits

Unit XV Food Faddism and Diet Quackery

A. What is food faddism and diet quackery?

B. Local, state, and federal agencies and their controls of food faddism and diet quackery

C. Types of food fads

D. Types of diet quackery

Unit XVI Food Fallacies

A. Fallacies concerning nutrients

B. Fallacies concerning milk, eggs, butter, oleomargarine, fruits and vegetables, meat, breads, and cereals

C. Fallacies concerning food processing

Unit XVII Misuse of Coffee, Tea, and Sweetened Soft Drinks

A. Caloric values?

B. Effects on dental health

C. As diuretics to the human body

- Unit XVIII**    Importance of Nutrition
- A. Signs of possible nutritional deficiencies, in various parts of the human body
  - B. Prenatal and postnatal care
  - C. Care of the diabetic
  - D. Treatment of the tuberculous patient
  - E. Therapy of alcoholic
  - F. Treatment of cardiac cases
- Unit XIX**    Food-borne Diseases
- Unit XX**    Milk and Milk Products
- A. Nutrients in milk
  - B. Types of milk and milk products
  - C. Milk in menu planning
  - D. Milk grading and labeling
  - E. Inspection of dairy farms and milk plants
  - F. Examination of milk and milk products
  - G. Pasteurization
  - H. Milk-borne diseases
- Unit XXI**    Meat
- A. Types of meat
  - B. Nutrients in meat
  - C. Meat in menu planning
  - D. Meat inspection
  - E. Meat-borne diseases
- Unit XXII**    Fruits and Vegetables
- Unit XXIII**    Breads and Cereals
- Unit XXIV**    Sanitation in the Preparation and Serving of Foods
- Unit XXV**    School Lunch
- Unit XXVI**    Food Allergies
- Unit XXVII**    Social Customs in the Use of Foods and Table Etiquette

## UNITS OF HEALTH EDUCATION

A health education unit is a series of lessons built around a central topic. If a unit, Dental Health, is discovered by the teacher to be meaningful to pupil needs and interests, the unit could be divided into five lessons for second-grade pupils. These lessons might be (1) My Teeth; (2) Foods That Help My Teeth; (3) My Dentist; (4) I Brush My Teeth after Eating; and (5) Why I Take Care of My Teeth. In this chapter, an outline of possible subject matter (content) will be presented as a unit, Dental Health. Some of the content is applicable to the elementary school. In Chapter 16, a dental health lesson, "Why I Take Care of My Teeth," will be given.

A unit, in order to be effective, has an aim. This aim is the goal to



which instruction points. In the above-mentioned unit, Dental Health, the goal might be continuous proper dental health practices by all pupils in the second grade. These practices would include correct tooth brushing after eating, visiting the family dentist as the dentist prescribes, reducing fermentable carbohydrates in the daily diet, preventing injuries to the teeth, and having access to fluoridated drinking-water supplies.

There are objectives to the unit. These objectives must satisfy the pupil's health needs and interests. The objectives of the unit Dental Health might be (1) to understand the importance of the teeth; (2) to brush the teeth correctly; (3) to appreciate the work of the family dentist; (4) to choose foods benefiting the teeth; and (5) to protect the teeth against disease and injury. Thus these objectives could promote the pupil's dental health status and influence his dental health attitudes, practices, interests, and knowledge. Also, the objectives might develop from the reasons for the choice of the unit, Chapter 16.

As the teacher proceeds from one health education unit to the next, there should be organization within the unit. The first lesson includes an introduction to the unit, and the last lesson summarizes the highlights. Also, the teacher should plan the units of instruction so that there is (1) cohesion from one unit to the next and (2) correlation of the present health education unit with other health education units of the same or past grade levels. The unit Dental Health can be correlated with other health education units: Faulty Advertising of Dental Products (Area: Consumer health); Toothache and Mouth Injuries (Area: American Red Cross First Aid); and What about Sweetened Soft Drinks on Dental Health? (Area: Nutrition education).

The following health education units may be used at the elementary or secondary school levels. The pupils' health needs and interests will determine the amount of content within each unit. The following units are outlined to indicate some of the specific information included. They are examples of a few of the many health education units recommended for elementary and secondary schools.

## DENTAL HEALTH

1. Prevalence of dental health problems among pupils in elementary and secondary schools
2. Diet during pregnancy and its relation to the future child's dental health status
3. Deciduous teeth: number, location, structure, age when the teeth appear
4. Care of the deciduous teeth by the child, parent, and dentist
5. Six-year molars
6. Mixed dentition
7. Permanent teeth: number, location, structure, age when the teeth appear

8. Why do we have teeth?
9. Tooth brushing: why? when? how?
10. Care of the permanent teeth
11. Dental caries
12. Common dental health problems
  - a. Periodontal diseases
    - (1) Gingivitis
    - (2) Pyorrhea
    - (3) Vincent's angina
  - b. Malocclusions
  - c. Impacted teeth
  - d. Dental fluorosis
13. Signs of dental health problems (Chapter 2)
14. Family dentist and his services
15. Topical fluoride applications
16. Dental specialists and their services
17. Choosing a dentist
18. Dental hygienist and her services
19. Fluoridation of drinking-water supplies
20. Nutrition and its significance to dental health
21. False advertising of dental products
22. Misconceptions about dental health
23. Adult dental health problems
24. American Dental Association<sup>1</sup>

## EYE INFECTIONS, INJURIES, AND DEFECTS

1. Incidence of eye infections, injuries, and defects among pupils in elementary and secondary schools
2. Description of the parts of the eyeball and the physiology of vision
3. Accommodation
4. Loss of vision and what it means
5. Eye infections and their effects on vision (Chapter 2)
  - a. Stye
  - b. Conjunctivitis
  - c. Trachoma
  - d. Iritis
  - e. Blepharitis
  - f. Keratitis
  - g. Retinitis
6. Eye injuries and their effects on vision
  - a. Blows
  - b. Chemical burns
  - c. Careless play
  - d. Hunting accidents
  - e. Occupational hazards

<sup>1</sup> Chapter 3.

7. Eye defects and their effects on vision (Chapter 2)
  - a. Refractive errors
    - (1) Myopia
    - (2) Hyperopia
    - (3) Astigmatism
  - b. Strabismus
  - c. Presbyopia
  - d. Glaucoma (Chapter 4)
  - e. Cataract
  - f. Color-blindness
  - g. Tunnel vision
  - h. Diplopia
8. Vision screening procedures (Chapter 2)
9. Ophthalmologist, optometrist, orthoptist, and optician
10. Quality of light and avoidance of glare (Chapter 8)
11. Vision and sitting posture
12. Protecting our vision: daily dietary practices, sleep, avoidance of foreign objects in the eye, and effects of alcohol and tobacco on vision
13. Signs of possible visual difficulties (Chapter 2)
14. Television and vision
15. Glass lenses: purposes, care, and types
16. Contact lenses
17. False advertising of products and services related to vision
18. National Society for the Prevention of Blindness and the American Foundation for the Blind

## SELF-PRESERVATION IN THE EVENT OF A TORNADO

1. United States Weather Bureau's
  - a. Severe storm warning centers for the entire nation
  - b. Local United States Weather Bureau and its coordinated functions with severe storm warning centers
  - c. Forecasting of possible tornadoes
  - d. Notification of possible tornadoes to a community
  - e. Notification of tornadoes in progress to a community
2. Tornado
  - a. Occurrence in the United States
  - b. Types of weather associated with tornadoes
  - c. Types of funnel-shaped clouds
  - d. Tornado's speed of travel and wind speed in its vortex
  - e. Path of destruction
  - f. Destructive force
3. Self-preservation procedures in schools
  - a. School system defense director
  - b. Coordination of school procedures with local civil defense
  - c. Parental responsibilities

- d. Routes to areas designated as school shelters
- e. School shelters
- f. School practice signals
- g. Self-preservation techniques during school practice drills
- h. School practices drills from all facilities
- i. Care of younger children
- j. Fire protection
- k. American Red Cross First Aid stations and personnel's functions
- l. Postdisaster procedures
- 4. Self-preservation procedures in homes
  - a. Planning before disaster strikes
  - b. Community signals
  - c. Radio and television news reporting of possible tornadoes and tornadoes in progress
  - d. Turning off utilities
  - e. Shelter area in home
  - f. Care of young children, persons who are ill, and elderly members of family
  - g. Consultation with civil defense officials authorized for assistance
- 5. Self-preservation procedures in cities and towns
- 6. Self-preservation procedures in industrial plants and factories
- 7. Self-preservation procedures in open country

## RABIES

- 1. History of rabies in the United States
- 2. Cause of rabies
- 3. Animals acquiring rabies
  - a. Domestic-owned
    - (1) Household pets
    - (2) Farm animals
  - b. Strays (ownerless)
  - c. Wild life
  - d. Bats
- 4. Spread of rabies virus from rabid animal to another animal and to man
  - a. Bite of rabid animal
  - b. Contact with rabid bat
- 5. Incubation period
- 6. Signs of "furious" rabies
- 7. Signs of "dumb" rabies
- 8. Characteristics of rabid animal with neither "furious" nor "dumb" rabies
- 9. Seriousness of rabid animal bites to man
- 10. American Red Cross First Aid for animal bite and immediate medical care
- 11. Notification of local health department and police
- 12. Diagnosis of rabies in animals

13. Effects of rabies in man without medical care
14. Treatment of rabies in man
15. Prevention of rabies in household pets and farm animals
16. Care of household pets in addition to vaccination against rabies
17. Incidence of rabies and international measures to control rabies

## MENSTRUAL HYGIENE

1. Orientation procedures to be completed before actual teaching
  - a. Teachers' responsibilities to school officials and parents
    - (1) Prepare a tentative but detailed outline of subject matter.
    - (2) Present outline to principal and supervisor of health education, if available.
    - (3) Have approval of principal and supervisor of health education, if available.
    - (4) Present approved outline to Parent-Teacher groups whose daughters will receive instruction.
    - (5) Inform Parent-Teacher groups that certain questions asked the teacher will be referred to parents.
    - (6) Present films and other audiovisual aids, to be used with outline, to Parent-Teacher groups.
    - (7) Have approval of Parent-Teacher groups on outline and instructional materials.
  - b. Teacher's own precautionary procedures
    - (1) Make arrangements for fifth- or sixth-grade boys during the presentation of Menstrual Hygiene to fifth- or sixth-grade girls.
    - (2) Include Menstrual Hygiene after the sixth week of the school year after becoming acquainted with fifth- or sixth-grade girls.
    - (3) Be informed about the girls' community, family, religious, and social backgrounds.
    - (4) Have detailed outline with correct terminology in anatomy and physiology.
    - (5) Invite parents to visit health education courses.
    - (6) Evaluate carefully all audiovisual instruction aids.
    - (7) Present the Menstrual Hygiene unit independently of any special lecturer.
    - (8) Keep classroom corridor door open for parent visit.
    - (9) Be objective and accept Menstrual Hygiene as a unit within Family Life Education.
    - (10) Inform the fifth- or sixth-grade girls that some questions will not be answered and these questions are to be asked of parents.
    - (11) Keep notes on students' questions.
    - (12) Have an "air of understanding" student problems and gain the student's confidence.
    - (13) Be positive in the teaching.
    - (14) Refrain from relating personal experiences.

## c. Student's responsibilities

- (1) Discuss openly all questions.
- (2) If student is hesitant in asking a question before the class, she may:
  - (a) Place question, without identifying herself, in a question box.
  - (b) Seek conference with teacher.
- (3) Avoid undercurrent of conversation among students.
- (4) Omit use of individual's name when citing a particular situation.
- (5) Use correct anatomical and physiological terms.
- (6) Use the approved periodicals, pamphlets, and texts recommended by National Congress of Parents and Teachers, American Social Health Association, and American Medical Association, etc.

NOTE: With some changes, these orientation procedures should be completed before teaching any unit of Family Life Education.

## 2. Menstrual Hygiene (outline for teacher)

## a. Menstrual cycle

- (1) Female reproductive organs
- (2) Puberty and menarche
- (3) Function of pituitary and ovarian hormones in ovulation
- (4) Ovulation
- (5) Menstrual cycle
  - (a) Passage of ovum to uterus
  - (b) Changes in endometrium of uterus and the functions of the uterine hormones.
- (6) Menstruation
  - (a) Length of menstrual flow
  - (b) Amount of blood leaving vagina
  - (c) Passage of ovum from vagina
  - (d) Changes in bodily functions during menstruation
- (7) Menstruation defined
- (8) Purposes of menstruation
  - (a) Availability of ovum for future fertilization
  - (b) Preparation of the endometrium of the uterus
  - (c) Embedding of fertilized cell in endometrium of uterus
- (9) Replacement of blood lost during menstruation by blood-forming organs
- (10) Fallacies concerning menstruation
- (11) Menopause

## b. Personal care during menstruation

- (1) Acceptance of menstruation as a normal phase of daily living
- (2) Monthly calendar of menstrual cycle
- (3) Types of baths

- (4) Use of deodorants
- (5) Types of exercise
  - (a) Regularly scheduled physical education activities
  - (b) Avoidance of lengthy and strenuous exercises
- (6) Essential Four Food Groups
- (7) Sleep and rest
- (8) Avoidance of constipation
- (9) Avoidance of colds
- (10) Avoidance of emotional upsets
- (11) Acceptance of occasional irregularity in monthly schedule during adolescence
- (12) Extreme irregularities needing care of family physician
  - (a) Dysmenorrhea
  - (b) Amenorrhea
- (13) Use of sanitary napkins or tampons
- (14) Disposal of sanitary napkins or tampons
- (15) Social responsibilities
  - (a) Special attention to grooming
  - (b) Ladylike conduct at parties, dances, or other events

## ALCOHOL AND ALCOHOLISM

1. Teacher's responsibilities to school officials before actual teaching
  - a. Attend in-service health education to have up-to-date and valid information.
  - b. Prepare a detailed outline with up-to-date and valid references.
  - c. Have approval of principal and supervisor of health education, if available.
  - d. Invite parents and designated representatives of community groups to visit health education classes.
  - e. Evaluate all audiovisual aids and printed materials to be used in this unit.
  - f. Avoid use of audiovisual aids and printed materials that moralize or have unreliable information.
  - g. Understand the use of alcoholic beverages in some religious ceremonies, in family living, and in social customs.
  - h. Accept that the teacher must be positive and impersonal.
  - i. Develop attitudes among youth that enable them to form their conclusions about whether or not alcoholic beverages contribute to their physical, mental, and social development.
  - j. Keep notes on students' questions.
  - k. Have an "air of understanding" youth's problems associated with their decisions to use or not to use alcoholic beverages.
2. Alcoholism—national health problem
  - a. Number of persons using alcoholic beverages in the United States
    - (1) Per capita consumption of beer
    - (2) Per capita consumption of distilled spirits

- b. Cost of consumption of alcoholic beverages in one year in the United States
  - c. Federal and state taxes collected from sale of alcoholic beverages in one year in the United States
  - d. Money spent on advertising of alcoholic beverages in one year
    - (1) Cost of advertising of alcoholic beverages in one popular magazine
    - (2) Trends of advertising to influence young people
  - e. Financial losses to industry in one year
    - (1) Value of products not produced due to absenteeism
    - (2) Man-hours lost in production
    - (3) Accidents on the job
  - f. Number of alcoholics in the United States
    - (1) Ratio of men to women
    - (2) Number of alcoholics in a state
    - (3) Number of persons in families where one member is an alcoholic
  - g. Traffic accidents caused by persons using alcoholic beverages
  - h. Arrests of persons, not driving automobiles, who use alcoholic beverages
  - i. Premiums of automobile and fire insurance explained by the increase in traffic accidents caused by persons using alcoholic beverages, and the increase in home fires caused by carelessness of persons using alcoholic beverages
  - j. Aid to dependent children of alcoholic parents
  - k. Juvenile delinquency as a result of one or both parents being an alcoholic
  - l. Divorce and broken homes because husband or wife is an alcoholic
3. Percentage of persons who abstain from use of alcoholic beverages
    - a. Reasons for abstinence
    - b. Trends in the United States
  4. Alcohol and alcoholic beverages
    - a. What is alcohol?
    - b. Use of alcohol in industry
    - c. Kinds of alcohol
    - d. Production of grain alcohol
    - e. Types of alcoholic beverages
      - (1) Fermented juices containing natural sugar
      - (2) Fermented malt beverages
      - (3) Distilled liquors
    - f. Fermentation
    - g. Distillation
    - h. Percentage of alcohol, by volume, in "sweet" and "dry" wines
    - i. Percentage of alcohol, by volume, in beer and ale
    - j. Percentage of alcohol, by volume, in distilled liquors
      - (1) Whisky



- (2) Gin
- (3) Brandy
- (4) Rum, etc.
- k. "Proof" of liquor
5. Classification of persons using alcoholic beverages
  - a. Occasional drinker
  - b. Frequent drinker
  - c. Regular drinker
  - d. Alcoholic dependent
  - e. Alcoholic
6. Can every person using alcoholic beverages become an alcoholic?
7. Mental health problems that affect a person who may become an alcoholic
8. Effects of alcoholic beverages on the human body
  - a. Digestive system
    - (1) Absorbed into lining of stomach
    - (2) Passes directly into blood, etc.
  - b. Circulatory system
    - (1) Rate of absorption into blood
    - (2) Concentration of alcohol in blood
    - (3) Effects on heart, etc.
  - c. Central nervous system
    - (1) Acts as depressant
    - (2) Reaction time reduced
      - (a) Traffic accidents
      - (b) Accidents in various occupations
    - (3) Reduction of alertness, judgment, discretion, critical attitudes, etc.
  - d. Muscular system
    - (1) Effects coordination
    - (2) Lessens muscular efficiency, etc.
  - e. Other organs impaired
    - (1) Liver
    - (2) Eyes
    - (3) Lungs
  - f. Alcoholism and nutritional deficiencies
  - g. Alcoholism and resistance to communicable diseases
  - h. Delirium tremens
9. Percentage of alcohol in the blood and drinking limits for motorists
10. Possible causes of alcoholism
11. Progression of behavior of the person using alcoholic beverages over a period of years, who becomes an alcoholic
12. Trends in use of alcoholic beverages
  - a. Availability for purchase
  - b. Parents and adolescents' use
  - c. High school drinking
  - d. College drinking

- e. Occasional or frequent drinker who becomes an alcoholic
- f. Social drinking
- h. Alcoholic woman
- 13. Social and psychological effects of alcoholism on the alcoholic and his family
- 14. Rehabilitation of the alcoholic
  - a. Care and understanding by family and friends
  - b. Medical care
  - c. Hospital care
  - d. Psychotherapy
  - e. Alcoholics Anonymous
- 15. Research in alcoholism

### QUACKERY IN HEALTH PRODUCTS AND SERVICES

- 1. What is quackery?
- 2. Cost of self-medication in the United States in one year
  - a. Vitamin preparations
  - b. Laxatives
  - c. Pain relievers, etc.
- 3. Cost of quackery in the United States in one year
  - a. Cures for arthritis and rheumatism
  - b. Cancer cures
  - c. Food faddism and diet quackery
  - d. Eyeglasses and eye nostrums
  - e. Dental nostrums and devices
  - f. Books, pamphlets, bulletins, etc., promoting quackery
- 4. "Borderline" quackery promoted by nationally known firms selling health products of "some" value
- 5. "True" quacks offering products and services for illness the consumer thinks he has
- 6. Products available
  - a. Types
    - (1) Cancer cure-alls
    - (2) Special foods
      - (a) High potency and "shotgun" vitamins to cure consumer
      - (b) Natural and organic foods
      - (c) Miracle foods, etc.
    - (3) Reducing fads and diets
    - (4) Cure-alls for everything the consumer thinks he has
    - (5) Arthritis and rheumatism cure-alls
    - (6) Falsely advertised dentures and dental products
    - (7) Devices for hard-of-hearing and deaf person
    - (8) Eyeglasses and eye nostrums
    - (9) Concoctions to "stop smoking"
    - (10) Tablets, lotions, salves for sexual prowess
    - (11) "Stop baldness" nostrums

- (12) Cosmetics with deceptive claims
- (13) Magic potions
- (14) Cure-alls for epilepsy, cerebral palsy, mental illness
- (15) Cure-alls for venereal diseases
- (16) Concoctions for skin infections
- (17) Mind cures, etc.
- b. Promotion and sales
  - (1) False advertising
  - (2) Testimonials and claims
  - (3) Mail-order products
  - (4) Door-to-door salesman
  - (5) "Health" promotion lecturers, etc.
7. Services available
  - a. Types of quacks or charlatans
    - (1) Spinal adjustment specialist
    - (2) Food faddist and diet quacks
    - (3) Cancer specialist
    - (4) Arthritis specialist
    - (5) Naturopath
    - (6) Cults
      - (a) Sexologist, autohypnotist, psychoquack
      - (b) Religious groups claiming cures
    - (7) Herbalist
    - (8) Hypnotist claiming cures, etc.
  - b. Contacts with consumers
    - (1) Advertising
    - (2) Testimonials and claims
    - (3) Products sold through United States mail
    - (4) Door-to-door salesmen
    - (5) Free lectures to the public
    - (6) Books, pamphlets, bulletins, etc. distributed by quack
    - (7) Products offered on a money-back-guarantee or without cost on trial basis, etc.
8. Types of persons buying quack products or using services of quacks
9. Ways to recognize quackery
  - a. Advertisements
  - b. Statement that treatment and cure for disease, nonremediable condition, etc., possible only by person offering treatment and bearing name of quack or clinic operated by quack
  - c. Claims of persecutions and sabotage by American Medical Association
  - d. Mail-order clinic
  - e. No consultation with licensed medical doctor
  - f. No contact with accredited and licensed hospitals
  - g. No use of medical research from reputable professional sources
  - h. Not licensed to practice medicine, dentistry, physical therapy,

and pharmacy, and no accredited professional preparation in the health professions

- i. Distortion of statements from valid research by professional groups
- j. Fees charged without evidence of clinical and laboratory tests and diagnostic measures used by medical doctor, etc.

NOTE: Subsequent units: (1) Wise Consumer of Health Products and (2) Wise Selection of Health Services

## CANCER

1. Cost of hospital bills, drugs, and medical fees for cancer treatment in one year in the United States
2. Loss in industrial production among employed workers having cancer, in the United States, in 1 year
3. Rising incidence of lung cancer among men and women
4. Normal cell growth
  - a. Cell division
  - b. Cell differentiation
5. Abnormal cell growth
  - a. Compared with normal cell growth
  - b. Types
    - (1) Benign
      - (a) Collection of localized abnormal cell growths
      - (b) Varieties
    - (2) Malignant
      - (a) Abnormal cell growth no longer localized
      - (b) Dedifferentiation
      - (c) Malignant growth spreads
        - (1) Infiltration
        - (2) Metastasis
        - (3) Transplantation
      - (d) Types
        - (1) Carcinoma
        - (2) Sarcoma
6. What causes the abnormal cell growth?
  - e. Heredity?
  - a. Age?
  - b. Viruses?
  - c. Bacteria?
  - d. Hormones?
  - f. Environmental factors?
    - (1) Occupational hazards
    - (2) Chronic irritations
    - (3) Habits and customs
    - (4) Air pollution
    - (5) Radiation

7. *Cancers of different organs and tissues of the human body*

## a. Skin

## (1) Precancerous skin conditions

- (a) Keratosis
- (b) Dark brown or blue-black moles
- (c) Leukoplakia

## (2) Cancer

- (a) Basal-cell
- (b) Epidermoid
- (c) Malignant melanoma

## b. In and around the mouth

- (1) Lip
- (2) Tongue
- (3) Floor and top of mouth
- (4) Cheeks and gums
- (5) Salivary glands

## c. Nose and sinuses

## d. Pharynx

## e. Larynx

## f. Lungs

## (1) Lung cancer and prolonged smoking

## (2) Investigations supporting relations of prolonged smoking to lung cancer

- (a) American Cancer Society
- (b) American Medical Association
- (c) Consumers Union, etc.

## g. Digestive organs

- (1) Six signs to be aware of
- (2) Esophagus
- (3) Stomach
- (4) Colon
- (5) Rectum

## h. Breast

- (1) Incidence
- (2) Nine signs to be aware of

## i. Uterus

- (1) Cervix and abnormal bleeding
- (2) Corpus and abnormal bleeding

## j. Prostate

- (1) Incidence
- (2) Signs to be aware of

## k. Leukemia

- (1) Abnormal increase of white blood cells
- (2) Acute leukemia
- (3) Chronic myeloid leukemia
- (4) Chronic lymphatic leukemia

## l. Other parts of the human body

8. Personal responsibilities
  - a. Annual medical examination
    - (1) Breast and pelvic examinations in women
    - (2) Prostate and rectal examinations in men
  - b. Chest roentgenogram for habitual smokers every 6 months
  - c. Annual dental examination
  - d. Self-examination of the female breast
  - e. Knowledge of seven danger signals of cancer
  - f. Evaluation of pseudo information about cancer
9. Early detection the best method of helping cancer patient
10. Diagnosis of possible cancer
  - a. Cancer detection centers
  - b. Clinical diagnosis by physician
  - c. Microscopic diagnosis
    - (1) Biopsy and its importance
    - (2) "Pap" smear
    - (3) Cancer cells in some body fluids
    - (4) Blood studies—prostate and bone
  - d. Other diagnostic methods being investigated
11. Treatment of cancer
  - a. Chemotherapy
    - (1) Hormones
    - (2) Cell poisons
    - (3) Metabolic antagonists, etc.
  - b. Surgery
  - c. Radiation
    - (1) X-rays
    - (2) Radioisotopes, etc.
  - d. Rehabilitation of the patient
  - e. Patient's responsibilities
12. Cancer quackery
  - a. Cancer clinics operated by charlatans
  - b. Types of cancer quackery
13. American Cancer Society
14. National Cancer Institute
15. Research in cancer
  - a. Basic research
  - b. Clinical research
  - c. Preventative research

### REFERENCES FOR FURTHER STUDY

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## CONTENT WITHIN LESSON PLANS

Having an outline of health education content, the teacher can plan the unit. From the unit, lessons built around the central topic of the unit can be developed.

An outline of health education content or subject matter should be given in each lesson. The content is divided into three parts. The first part is the Review or Introduction. Each lesson, following the first lesson, begins with a summation of the past lesson. This is the *Review*. In the first lesson of the unit, the *Introduction* takes the place of the Review. The second part of the lesson is the *New Content*. The largest part of the lesson comprises the second part. The third part of the lesson is the *Conclusion*. The main points of the lesson are emphasized in the Conclusion.

The main points of the unit should be summarized when the last lesson of the unit is reached. In addition, teacher-pupil evaluative criteria (Chapter 22) might indicate the influence of the content on the pupil's health status, attitudes, practices, and knowledge.

The following health education lessons are taken from units satisfying pupils' health needs and interests. Each lesson has a unit title, and each states the aim of the unit, the objectives, the lessons within the unit, the content, the methods, the materials, and the teacher's correlation. Methods and materials of instruction will be explained in the next chapter. Teacher's correlation can be accomplished in several ways. It can be the tie-in of health education content to subject matter in science, language arts, arithmetic, and social studies. The teacher's correlation can be the tying together of health education content of one lesson with (1) previous lessons of the same health education unit or (2) lessons of other health education units. The success of correlation depends on the teacher's fund of information in other curricular areas as well as in health education.

The first of these lessons is the last lesson within a unit: Keep Those New Teeth, for second-grade pupils.



NAME OF TEACHER<sup>1</sup>

AGE OF STUDENT—7 OR 8 YRS.

GRADE—2

**Unit Title—KEEP THOSE NEW TEETH***Aim of the Unit*—To practice proper dental health at all times**OBJECTIVES OF THE UNIT**

1. To understand the importance of my teeth
2. To brush my teeth correctly after eating
3. To appreciate the services of my family dentist
4. To choose foods helping my teeth
5. To protect my teeth from diseases and injuries

**LESSONS OF THE UNIT**

1. My teeth
2. The foods helping my teeth
3. My dentist
4. I protect my teeth from injuries
5. I brush my teeth after eating
6. Why I take care of my teeth

**REASONS FOR CHOICE OF THIS UNIT**

1. High incidence of dental caries was reported by the family dentist on the second-graders' dental records.
2. Incorrect tooth brushing after the noonday school meal was observed by the teacher.
3. Candies and sweetened soft drinks were included in the daily diet of the second-graders.
4. Some of the children fear visits to their family dentist.
5. Tartar and gingivitis have been observed by the teacher on the teeth and supporting tooth structures of ten children.
6. Pencils, pens, and other objects are frequently placed between the children's teeth.
7. Malocclusion caused by early loss or late retention of deciduous teeth was observed.

**WHY I TAKE CARE OF MY TEETH**

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<b>REVIEW</b>			
A. <i>Tooth brushing of upper and lower sets of teeth</i>	A. Teacher demonstration 1. Preparation of tooth-brush	A. Teacher uses model of upper and lower teeth Toothbrush	A. Lesson 5

<sup>1</sup> This lesson has been presented by the author in the professional school health courses, The University of Texas.

## WHY I TAKE CARE OF MY TEETH (Cont.)

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<i>REVIEW (Cont.)</i>	<p>2. Demonstration with pupils watching (tooth-brushing procedures given in Chapter 3)</p> <p>a. Start right upper 6-year molar—outside surface, and proceed to left upper 6-year molar</p> <p>b. Start right upper 6-year molar, inside surface, and proceed to left upper 6-year molar</p> <p>B. Pupils practice tooth brushing following second teacher demonstration of "a" and "b"</p> <p>C. Pupils attempt tooth brushing without any teacher demonstration</p> <p>Teacher moves around class correcting pupil motions</p> <p>D. Teacher demonstration with pupils watching</p> <p>1. Start right lower 6-year molar, outside surface, and proceed to left lower 6-year molar</p>	<p>B. Pupils use own toothbrushes</p> <p>Watch motions in hand mirrors. Paper towel on desk catches saliva</p>	B. Lesson 5

## WHY I TAKE CARE OF MY TEETH (Cont.)

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<i>REVIEW (Cont.)</i>			
	2. Start right lower 6-year molar, inside surface, and proceed to left lower 6-year molar		
	E. Pupils practice tooth brushing following second teacher demonstration of "D"	E. Pupils use own toothbrushes	E. Lesson 5
	F. Pupils attempt tooth brushing without any teacher demonstration	Watch motions in hand mirrors. Paper towel on desk catches saliva	
	Teacher moves around class correcting pupil motions		
	G. Pupils alternate the brushing of upper and lower sets of teeth		
	H. Teacher and pupils clean toothbrushes, replace brushes in containers, store on shelves, and place hand mirrors in storage trays—paper towels thrown away		
B. <i>Tooth brushing to follow snack and noonday school meal</i>			
<i>NEW CONTENT</i>			
A. <i>Why I care for my teeth</i>	A. Pupil chosen to write on chalkboard reasons given by class	A. Chalkboard	A. Previous lessons of unit

## WHY I TAKE CARE OF MY TEETH (Cont.)

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<b>NEW CONTENT (Cont.)</b>			
	B. Teacher leads discussion and refers to posters and charts used in past lessons	B. Teacher uses posters and charts from American Dental Association	
<b>CONCLUSION</b>			
A. <i>Summarization of unit with the use of puppet and film</i>	A. Teacher orients pupils about puppet and film	A. Teacher uses hand puppet, "Herbert." Film—"What Happened to Herbert?" Texas State Department of Health, # 294	A. Past lessons are emphasized through orientation to film and in the film
	B. Film shown		
	C. Teacher leads discussion after film	C. Teacher uses hand puppet during discussion	
	D. Film reshown		

## B. Evaluation

1. After snack and school noonday meals, do the children brush their teeth as demonstrated in this unit?
2. What foods do the children eat at the noonday school meal?
3. Has there been a reportable reduction in dental caries among these children?
4. Are these children's parents reporting more frequent visits to the family dentist?
5. Has there been a reduction in dental injuries among these children?
6. Has there been omission of candies and sweetened soft drinks in the children's daily diets?
7. Have the children developed a strong desire to maintain cleanliness of their mouths?
8. Do the children understand why they are losing their deciduous teeth and getting their permanent teeth?
9. Do children realize that dental caries can mean loss of their permanent teeth?
10. Have thumb sucking and other harmful habits that cause malocclusion been reduced?

## TEACHER'S REFERENCES

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The second of these lessons is the third lesson of a unit, Safe Drinking Water, presented to fifth-graders.

MISS ELIZABETH B. LANG<sup>2</sup>  
AGE OF STUDENT—11 OR 12 YRS.  
GRADE—5

*Unit Title*—SAFE DRINKING WATER

*Aim of the Unit*—To accept the necessity of purified drinking water

## OBJECTIVES OF THE UNIT

1. To use purified drinking water
2. To understand what diseases are spread through polluted water
3. To appreciate the work of the community sanitary engineer
4. To be aware of the source of our public water supply and purification of drinking water

## LESSONS OF THE UNIT

1. Importance of our water supply
2. Dangers of polluted water
3. Is our community's water safe?
4. Our visit to the water purification plant

## REASONS FOR CHOICE OF THIS UNIT

1. Two fifth-grade boys, while on a fishing trip, drank some water from the stream in which they were fishing and became ill.
2. Fifth-graders want to know why the boys became ill.
3. Pupils have asked, "Where does our drinking water come from?"
4. Several cases of typhoid fever had been reported in our community.

<sup>2</sup> This lesson was taught by Miss Elizabeth B. Lang in the professional school health courses, The University of Texas. Some changes have been made in the original lesson by the author of this text.

## IS OUR COMMUNITY'S WATER SAFE?

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<b>REVIEW</b>			
A. Highlights of past lessons	A. Teacher leads discussion	A. Chalkboard used for Word List:	Language arts—spelling, definitions
1. Purified vs. polluted water		Typhoid	
2. Water-borne diseases—typhoid, dysentery, enteritis		Polluted	
		Purified	
		Enteritis	
		Dysentery	
3. Effects on human being of each disease	Question-answer		
4. Why diseases are found in polluted water			

## NEW CONTENT

TEACHER: We're going to discuss our community's water supply today.

You can decide for yourself whether it is or is not safe. Jane volunteered to gather information so that she could report to us where most cities and towns get their water supply.

JANE: I learned that most cities get their water from one of these sources: springs, lakes, mountain drainage, artesian wells, and rivers.

PATL: I guess we don't have very safe water. It was water from that stream that made Tom and George sick.

Report by pupil

A pupil chosen by class summarizes Jane's report on the chalkboard

Geography—pupils trace course of rivers on their maps. Pupils try to locate source of water supply for large cities

## IS OUR COMMUNITY'S WATER SAFE? (Cont.)

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<b>NEW CONTENT (Cont.)</b>			
<b>TEACHER:</b> A lot of things happen to the water before it reaches our homes. Sue and Jim made a trip to the City Water Department to learn how our community's water is purified.	Teacher had previously talked with Sue and Jim about their report. Also, suggestions for their poster were given	Poster has different parts of the water purification system. Parts of system are to be added by Sue and Jim during their explanation	Arithmetic problems will be used to determine the average daily water consumption per capita
<b>SUE:</b> I think you will be surprised to learn how many things happen to the water before it comes into our homes. Jim and I have a poster to explain the different steps in purification to you.			
<b>JIM:</b> This is the source of our water supply. First, water goes into this big concrete well (attaches well to poster). A large bar screen keeps logs and other large objects from entering the well. Another finer screen keeps out all small sticks, leaves, moss, and other objects. This well is located about 150 feet from the water edge.			
<b>SUE:</b> Higher up on the bank, about 600 feet away from the well, is a concrete pump station (attaches pump station to poster). Pumps in this station take the water from the well and pump it to the filtration plant.			
<b>JIM:</b> Next is the head house (attaches head house to poster). This is the place where chemicals added to the water are stored. Here a machine adds the chemicals to our water. Lime, iron sulphate, chlorine, and ammonium are added. The lime is used to soften the water. The iron sulphate helps to make the water clear. The chlorine and ammonium disinfect the water. They kill all bacteria which produce disease.			
<b>SUE:</b> Water passes through the mixing chamber (attaches mixing chamber to poster). Here the water is stirred and whirled around so that the chemicals become thoroughly mixed with water.			
<b>JIM:</b> Water flows into large concrete settling basins (attaches settling basins to poster). Here is a bottle of dirty water. Most of the dirt has settled to the bottom (shakes bottle). Now, it's all stirred up. You can look at it after a few minutes and see how quickly most of the dirt will settle to the bottom. Water passes through these settling basins, very slowly, so dirt can settle to the bottom. The clearer top part of the water flows on.			
<b>SUE:</b> Next, the water passes through filter beds filled with sand and gravel (attaches filter beds to poster). Here, particles floating on top of the water failing to settle in the settling basins are taken from the water. I have a the weekly model of a filter to show you how the filter beds work. The particles Austin and water stick to the sand and gravel as the water seeps through (points			

model). First, there is a layer of sand. Then, there is a layer of gravel with a strainer underneath. You can see that there are many particles of foreign matter in this jar of water. Most of these particles will stick to the sand and gravel as the water goes through (pours water into filter and holds glass so class can see the water seeping through).

JIM: Under the filter beds is a big concrete tank called the clear well (attaches clear well to poster). By the time the water reaches the clear well, it is pure and ready for use.

SUE: (Attaches distribution system to poster) Water is pumped from the clear well to the distribution system. This system sends the water into pipes. The pipes carry water into homes, schools, and buildings.

JIM: We learned, too, that our community has a big storage place for purified water. It is called the reservoir because it holds a reserve supply. It holds 12 million gallons of water.

SUE: Every day, at the filtration plant, tests are made to be sure the water is clear. I think we can feel safe in using our community's water.

JACK: Where is the community filtration plant located?

## CONCLUSION

TEACHER: I have a map of our community so we can locate the filtration plant. You have probably passed very near to it many times (shows location of plant on map). Tomorrow we are going to visit the filtration plant, because Sue and Jim made arrangements for our visit.

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The third of these lessons is the second lesson of an educational television unit, Household Poisons, taught to sixth-graders.

## HEALTH EDUCATION

NOVEMBER 27, 1962

DR. JESSIE HELEN HAAG<sup>3</sup>

TIME: 2:00-2:25 P.M.

### VIDEO

### CONTENT-AUDIO

CAMERA: Picture of boy at medicine cabinet (vignette)

A. The telecast lesson, **EMERGENCY CARE FOR POISONING**, was taken from a three-lesson unit on Household Poisons, in the Area: American Red Cross First Aid, a division of the subject matter field, *health education*

B. Why was this unit chosen?

1. Approximately 600,000 boys and girls swallow poisonous substances in the United States in one year
2. Approximately 600 children die annually in the United States from accidental poisoning
3. Most frequent cause of poisoning among boys and girls is aspirin—20 percent of the cases
4. Of the 15,000 household and commercial chemical products, excluding drugs, 79 percent are moderately toxic

C. Telecast lesson consists of:

1. Types of household poisons
2. Signs of poisoning
3. American Red Cross First Aid for most cases of poisoning
4. American Red Cross First Aid when a boy or girl has taken a strong acid, alkali, strychnine, or kerosene

D. Types of household poisons—Review of past lesson

1. Medicines
    - a. Aspirin
    - b. Laxatives
    - c. Barbiturates
    - d. Vitamins
    - e. Iodine
    - f. Salves
    - g. Pain-killers
    - h. Prescribed medication by physician
- (1) Camera on poster, "Medicines Can Be Poisons"
- (2) Camera on all medicines
- (3) Camera on vocabulary word, medication

<sup>3</sup> This lesson was written and taught by the author of this text as one of the weekly health education lessons, September 4, 1962-January 31, 1963, KRLN-TV, Austin and San Antonio, Texas.

## EMERGENCY CARE FOR POISONING (Cont.)

VIDEO	CONTENT-AUDIO
(4) Camera on bromides	i. Bromides j. Ointments for aching muscles k. Rubbing alcohol l. Tranquilizers m. Calamine lotion n. Medicated sprays
(1) Camera on all household preparations	2. Household preparations a. Germicides b. Kitchen-sink cleaners c. Kitchen-drain cleaners d. Camphor e. Soaps and powders (detergents): laundry, dishes f. Bleaches g. Ammonia h. Ink i. Shoe polish (liquid, waxes) j. Silverware polish (polish, wax) k. Floor wax and floor cleaners l. Window cleaners (cake, spray) m. Cleaning fluids
(1) Camera on petroleum products	3. Petroleum products a. Gasoline b. Motor oils c. Antifreeze
(1) Camera on paint and car-care items	4. Paint and car-care items a. Paint b. Paint removers c. Auto waxes and polishes d. Turpentine
(1) Camera on pesticides	5. Pesticides a. Insect sprays b. Weed killers c. Sprays for plants d. Ant poisons e. Rat poisons
(1) Camera on cosmetics	6. Cosmetics a. Cologne and perfume b. Nail polish c. Nail polish remover d. Lipsticks e. Powder f. Hair shampoos g. Hair rinses h. Hair conditioners i. Shaving creams j. After-shave lotions

## EMERGENCY CARE FOR POISONING (Cont.)

## VIDEO

## CONTENT-AUDIO

- 
- k. Hand lotions
  - l. Body deodorants
  - m. Tooth pastes
  - n. Tooth powders
  - o. Mouth washes
  - p. Facial soaps
  - q. Facial creams and lotions
  - 7. There are more than a quarter million trade-name chemical products currently at use in homes and industry
  - 8. Hundreds of new products reach the customer yearly
  - 9. In the cosmetics field, between 1000 and 2000 new items appear each month
- E. Signs of poisoning
- (1) Camera on teacher
    - 1. Signs vary by the type of poison taken: Medicines, household preparations, petroleum products, paint, pesticides, and cosmetics and the variations of each type
    - 2. Amount of poison taken
    - 3. Time elapsed after the poison was taken
    - 4. Signs
      - a. Some poisons cause no signs until absorbed into the human body
      - b. Burns around the mouth
      - c. Abdominal pain
      - d. Nausea
      - e. Vomiting
      - f. Dimness of vision
      - g. Convulsions
      - h. Headaches
      - i. Deep sleep
  - (1) Camera on poster with signs
    - 5. Other ways to determine accidental poisoning
      - a. Information from person taking poison or an observer
      - b. Container holding poison
      - c. Sudden onset of pain or illness in a person without any sign of illness
      - d. Burns around the lips and mouth
      - e. Odor of person's breath
      - f. In alkali poisoning, burns around mouth
      - g. In kerosene poisoning, person gags and vomits
  - (2) Camera on vocabulary word, poisoning
    - 6. Save the label or container holding the poison for identification of the poison
  - (3) Camera on vocabulary word, label

## EMERGENCY CARE FOR POISONING (Cont.)

## VIDEO

## CONTENT-AUDIO

## F. Obtain medical advice

1. Call Poison Control Center listed under local hospitals in telephone directory
2. Call family physician and ask for antidotes to be given
3. Have someone do the telephoning while you give American Red Cross First Aid

## G. American Red Cross First Aid for most cases of poisoning

1. Give first aid immediately
  - a. Dilute the poison
    - (1) Quickly administer fluid in larger amounts
      - (a) Four or more glasses of water
      - (b) Milk can be used

- (1) Camera on vocabulary word, dilute
- (2) Camera on demonstration

## DEMONSTRATE

- (2) Larger the amount of fluid, the better
- (3) Several teaspoonfuls of baking soda to half glass of water

## DEMONSTRATE

- (4) Milk of magnesia can be used—preferred in baking soda

## DEMONSTRATE

- b. Induce vomiting
- c. If fluid cannot be given and vomiting must be started
  - (1) Hold head lower than abdomen
  - (2) Place finger or spoon in mouth to start gagging or vomiting

- (3) Camera on picture

## PICTURE

- d. If antidote given on label of poison, administer antidote as directed
  - (1) Antidote—a remedy counteracting a poison
- e. Universal Antidote—if no antidote on label
  - (1) Two parts of crumbled burnt toast
  - (2) One part or one cup of strong tea
    - (a) Strong-black/brown tea
  - (3) One part milk of magnesia

- (1) Camera on vocabulary words, Universal Anti-dote

EMERGENCY CARE FOR POISONING (Cont.)

VIDEO

CONTENT-AUDIO

DEMONSTRATE

(2) Camera on demonstrations

- f. Get to physician or hospital immediately
- g. Repeat first aid
  - (1) Dilute with fluids
    - (a) Water, or
    - (b) Milk, or
    - (c) Baking soda and water, or
    - (d) Milk of magnesia

DEMONSTRATE

- (2) Induce vomiting
- (3) If fluid cannot be given, induce gagging or vomiting
- (4) Antidote as directed on label
- (5) Universal Antidote, if no antidote given
  - (a) Toast
  - (b) Tea
  - (c) Milk of magnesia

DEMONSTRATE

- (6) Get to physician or hospital

H. American Red Cross First Aid when a child has taken a strong acid, alkali, strychnine, or kerosene

(1) Camera on vocabulary word, acid

- 1. Strong acid such as carbolic acid
  - (a) Dilute quickly with glass of water
  - (b) Give milk of magnesia or baking soda solution

DEMONSTRATE

- (c) Do not give enough to cause vomiting (Repeat)
- (d) Give milk or egg white to protect lining of stomach and intestines.

DEMONSTRATE

(2) Camera on vocabulary word, alkali

- 2. Alkali-lye
  - (a) Give a glass of water quickly, or
  - (b) Give vinegar or lemon juice, or
  - (c) Give milk or egg white
  - (d) Do not cause vomiting

DEMONSTRATE

(3) Camera on vocabulary word, strychnine

- 3. Strychnine poisoning
  - (a) Give fluids-water
  - (b) Induce vomiting
  - (c) Not long period of vomiting

## EMERGENCY CARE FOR POISONING (Cont.)

VIDEO	CONTENT-AUDIO
(4) Camera on vocabulary word, kerosene	<ol style="list-style-type: none"> <li>4. <i>Kerosene</i> poisoning               <ol style="list-style-type: none"> <li>(a) No vomiting</li> <li>(b) Treat for shock</li> </ol> </li> <li>5. <i>In all cases</i> <ol style="list-style-type: none"> <li>(a) Telephone Poison Control Center</li> <li>(b) Telephone physician</li> <li>(c) Get child to physician or hospital</li> </ol> </li> </ol>
(5) Camera on demonstrations	<ol style="list-style-type: none"> <li>6. Strong acid               <ol style="list-style-type: none"> <li>(a) Dilute</li> <li>(b) Milk of magnesia or baking-soda solution</li> <li>(c) No vomiting</li> <li>(d) Milk or egg white</li> </ol> </li> <li>7. Alkali               <ol style="list-style-type: none"> <li>(a) Dilute</li> <li>(b) Vinegar</li> <li>(c) No vomiting</li> <li>(d) Milk or egg white</li> </ol> </li> <li>8. Strychnine               <ol style="list-style-type: none"> <li>(a) Water</li> <li>(b) Induce vomiting—short time</li> </ol> </li> <li>9. Kerosene               <ol style="list-style-type: none"> <li>(a) No vomiting</li> <li>(b) Treat for shock</li> </ol> </li> <li>10. Get medical care—Poison Control Center, physician or hospital</li> </ol>
Camera on teacher	<ol style="list-style-type: none"> <li>I. Summary (Conclusion)               <ol style="list-style-type: none"> <li>1. Types of household poisons                   <ol style="list-style-type: none"> <li>(a) Medicines</li> <li>(b) Household preparations</li> <li>(c) Petroleum products</li> <li>(d) Paint and car-care items</li> <li>(e) Pesticides</li> <li>(f) Cosmetics</li> </ol> </li> <li>2. Signs of poisoning</li> <li>3. Medical advice at first sign of poisoning</li> <li>4. American Red Cross First Aid for most cases of poisoning</li> <li>5. American Red Cross First Aid when a boy or girl has taken a strong acid, alkali, strychnine, or kerosene</li> </ol> </li> <li>J. Caution—Emergency Care for Poisoning!</li> <li>K. Complete "Post-Telecast Activities," p. 112, in the <i>Teacher's Guide, 1962-1963, KRLN-TV</i>, Austin and San Antonio, Texas</li> </ol>

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- Dreisbach, Robert. *Handbook of Poisoning: Diagnosis and Treatment*. Los Altos, Calif.: Lange Medical Publication, 1959.
- Henderson, John. *Emergency Medical Guide*. New York: McGraw-Hill, Inc., 1963.
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The fourth of these lessons is the second lesson of a three-lesson unit. To Smoke or Not to Smoke, presented to eighth-grade students.

MR. TED BETLEY<sup>4</sup>  
AGE OF STUDENT—14, 15 YRS.  
GRADE—8

## Unit Title—TO SMOKE OR NOT TO SMOKE

*Aim of the Unit*—To develop critical attitudes that influence the decision not to smoke

## OBJECTIVES OF THE UNIT

1. To be aware of the effects of smoking on the human body
2. To evaluate the use of tobacco from economic, social, and safety viewpoints

## LESSONS OF THE UNIT

1. Cigarettes (plain or filtered), cigars, and pipe tobacco
2. Case against tobacco
3. Smoke screen of "ads" and "fads"

## REASONS FOR THE CHOICE OF THIS UNIT

1. American Public Health Association reports that a million school-age children will die of lung cancer before they reach the age of 70
2. Teenagers have this problem: smoke or not to smoke
3. Commercial advertising of the smoking habit appeals to youth
4. Smoking is high on the list of student health interests
5. Athletes have asked many questions about the effects of smoking on their physical health

<sup>4</sup> This lesson was taught by Mr. Ted Betley in the professional school health courses. The University of Texas Changes have been made in the original lesson by the author of this text.

## CASE AGAINST TOBACCO

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<b>REVIEW</b>			
1. How harmful are cigarettes?	Questions read by designated students	Question box	
2. How much money is spent on tobacco every year?	Questions were submitted at the close of the last lesson by students		
3. What effect does tobacco have on the heart?		Chalkboard	Vocabulary list: Tobacco Nicotine Cigarettes Arsenic Epidemic Habit Irritate Digestion
4. Does smoking affect endurance?			
5. Does smoking affect digestion?			
6. Why do people smoke?			
7. Can smoking shorten your life?			
8. Does smoking cause lung cancer?			
9. Is smoking an acceptable social custom?			
10. Does smoking increase one's popularity?			
<i>Classification of Questions</i>			
1. Facts concerning sales, brands of cigarettes, and tar and nicotine content	Classification suggested by students		
2. Effects of smoking physiologically, socially, and economically			
<b>NEW CONTENT</b>			
1. What is tobacco?	Student committee		
a. Plant	Statistical data on chalkboard	Chalkboard	
b. Nicotine			
c. Tar			



## CASE AGAINST TOBACCO (Cont.)

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<b>NEW CONTENT (Cont.)</b>			
c. World Health Organization, etc.			
6. How does smoking affect athletes?			
7. Does smoking shorten the life span?			
8. What fire hazards result from smoking?			
9. Why is smoking considered "habit forming"?			
10. Is nicotine a depressant, stimulant, or depressant-stimulant?			

**CONCLUSION:  
ASSIGNMENT**

Red team—each member indicates the amount of nicotine and tars in one cigarette of different brands

White team—each member surveys 25 pupils in junior high school and classifies them as smokers, ex-smokers, and nonsmokers, and tells what brands the smokers use

Blue team—each member surveys 25 adults and classifies them as smokers, and nonsmokers and tells what brands they use

"Cigarettes," *Consumer Reports*, April 1961

"Cigarette Controversy: A Storm Is Brewing," *Reader's Digest*, August 1963

## STUDENT REFERENCES

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- McGrady, Pat. *Cigarettes and Health*, Public Affairs Pamphlet #220A. New York: Public Affairs Committee, 1960.
- Sallak, V. J. "What Are the Facts on Teen-Age Smoking?" *NTA Bulletin*, October 1960.
- "Smoking and Lung Cancer." *Consumer Reports*, June 1963.

## TEACHER REFERENCES

- American Cancer Society. *Cigarette Smoking and Lung Cancer*. New York: The Society, 1963.
- Hammond, E. C., and Daniel Horn. "Smoking and Death Rates—Report on Forty-Four Months of Follow-Up of 187,783 Men." *Journal of the American Medical Association*, 166:1159 and 1295, 1958.
- Ochsner, Alton. *Smoking and Health*. New York: Julian Messner, Inc., Publisher, 1959.
- Royal College of Physicians of London. *Smoking and Health*. New York: Pitman Publishing Corporation, 1962.
- Surgeon General's Advisory Committee on Smoking and Health. *Smoking and Health*. Washington, D.C.: U.S. Government Printing Office, 1964.

The fifth of these lessons is the fourth lesson of a five-lesson unit, Narcotics—Their Use and Abuse, discussed by eleventh-grade students.

MISS CYNTHIA ARMSWORTH<sup>5</sup>  
AGE OF STUDENT—17, 18 YRS.  
GRADE—11

*Unit Title*—NARCOTICS—THEIR USE AND ABUSE

*Aim of the Unit*—To avoid the use of narcotics

## OBJECTIVES OF THE UNIT

1. To understand the effects of narcotics
2. To learn the causes of drug addiction
3. To seek scientific facts concerning drug addiction
4. To be aware of the individual's responsibility in assisting local authorities to combat the sale of narcotics

## LESSONS OF THE UNIT

1. Narcotics—what are they?
2. What, how, and why of drug addiction
3. From "reefers" to heroin
4. "Goof-baller"—a growing menace
5. What are we doing about drug addiction?

<sup>5</sup> This lesson was taught by Miss Cynthia Armsworth in the professional school health courses, The University of Texas. Some changes have been made in the original lesson by the author of this text.

## REASONS FOR THE CHOICE OF THIS UNIT

1. Objective health knowledge test on narcotics given to these eleventh-grade youth indicated many misconceptions and misinformation
2. Students are interested in this phase of health education
3. Unit is a result of the many questions concerning juvenile drug addiction
4. Some cases of juvenile drug addiction have been reported within the local community

## "GOOF-BALLER"—A GROWING MENACE

CONTENT	METHODS	MATERIALS OF INSTRUCTION	TEACHER'S CORRELATION
<b>REVIEW</b>	Summary by teacher		
<b>NEW CONTENT</b>	Panel of three girls and boys led by a chairman  Student summarizes key statements on chalkboard	Chart illustrating different barbiturates  Capsules filled with baking soda represent barbiturates  Chalkboard	Vocabulary list: Barbiturate Barbituric Accidental Nembutal Seconal Phenobarbital
<b>CONCLUSION</b>	Summary by chairman and panel members		

## REVIEW

TEACHER: Yesterday, we discussed four narcotics: marijuana, opium, morphine, and heroin. We learned that marijuana and heroin often go hand in hand. Marijuana is the "steppingstone" to the more dangerous heroin. We discussed these terms: "tolerance," "habituation," and "physical dependence." Signs of drug addiction and effects on the human being, when the supply of the drug is withdrawn, were included in our discussion.

## NEW CONTENT

TEACHER: Today, we are going to investigate the users of barbiturates, sometimes called the "goof-baller." Bill will be the chairman of a panel consisting of Jane, Jimmy Dan, Bonnie, Tom, Jean, and John.

BILL: Jane, what is meant by "goof-baller"?

JANE: A "goof-baller" is a person using "goof-balls." In other words, he is a barbiturate addict. "Goof-balls" is one of the slang terms given the barbiturates. Other slang terms are "red hirs," "yellow jackets," and "blue heavens."

**BILL:** Would you tell us more about these barbiturates, Jimmy Dan?

**JIMMY DAN:** The barbiturates are derived from barbituric acid. This acid forms the basis of nearly all sleeping pills. The barbiturates are in the depressant group of narcotics. They are used by physicians to kill pain or cure insomnia. The trade names are Nembutal, Seconal, Luminal, Phenobarbital, and Veronal. They are recognized by their "al" suffix.

**BILL:** Jimmy Dan mentioned sleeping pills. Does he mean the ordinary sleeping pills we can buy in drugstores?

**TOM:** They are the ordinary sleeping pills. You can't legally buy them in the drugstore without a physician's prescription because of their addicting characteristics. The government has passed laws restricting the sale and use of barbiturates—sleeping pills—just as it restricts other narcotics.

**BILL:** Bonnie has gathered a few statistics to illustrate how barbiturate addiction has become a real problem.

**BONNIE:** I found some amazing statistics. If the production of 700,000 pounds were divided into normal doses of  $1\frac{1}{2}$  grains each, there would be enough capsules to put every man, woman, and child in the United States to sleep for 22 nights. Deaths from accidental barbiturate poisonings have quadrupled, and sleeping-pill suicides have multiplied six times. Barbiturates lead many other poisons as a cause of death.

**JEAN:** It sounds as though barbiturates are deadly.

**BONNIE:** I understood, from articles I read, that the most dangerous factor has to do with the person's forgetting the amount of barbiturates he has taken and therefore increasing the amount enough to kill himself.

**BILL:** Perhaps we had better discover how barbiturates act on the human body. John, what can you tell us of the effects of barbiturates?

**JOHN:** In the first place, barbiturates are true addicting drugs—with withdrawal symptoms, many of which we discussed yesterday. The "goof-baller" shows tolerance to the barbiturates and becomes physically dependent on them. The "goof-baller's" behavior is unpredictable. He is sloppy and careless. He is constantly picking fights. He loses his job. He does things he can't remember.

**JIMMY DAN:** I read that the person taking a capsule has his central nervous system numbed in some areas and not in other areas; so he acts abnormally.

**JANE:** How can a person have a part of his nervous system numbed and not all of it?

**BILL:** Do you remember when you studied the nervous system how parts of this system react differently to various stimuli? Barbiturates, being a form of stimulus, would affect some parts of the nervous system and not others.

**TOM:** Barbiturates affect your memory. The person taking barbiturates seems to be in a sort of half-dream, "fuzzy" condition.

**BONNIE:** That would explain how a person could forget he had taken any barbiturates and would keep on taking enough to kill himself.

**JANE:** If there are laws against selling these "goof-balls," how do people get them?

JEAN: That's simple. The same way they get any of the narcotics restricted by law: dope peddlers, illegal stores, smugglers, and through all types of illegal channels.

BILL: That brings us to Jane's report. Since Jane's father is a pharmacist, he permitted us to borrow these pictures of the more common forms of barbiturates. He gave Jane other information (shows pictures).

JANE: First, I'd like to pass around these small capsules. The red ones are nearly the size of the goof-balls. Barbiturates also come in tablet form—similar to an aspirin. This chart I made shows the color combinations and the names, both technical and slang, of common capsules. Notice that all of the technical names end in "al." You can identify barbiturates in this manner (explains chart).

BILL: Thank you, Jane. That was a fine explanation. Now, let's discuss how the "goof-baller" gets started using barbiturates. Tom, what did you find out about this?

TOM: Barbiturate addiction, like any other addiction, often starts in younger people as an experiment. They are looking for a thrill. Fads, gang pressure, and excitement are contributing factors with young people. There are psychological factors and social conditions.

JIMMY DAN: A lot of times, barbiturate addicts are "accidental" addicts. I would guess that some "goof-ballers" got started that way. It would be very easy to build up a dependence on sleeping pills.

JANE: I agree with you, Jimmy Dan. That's one reason why we must be on the alert, because accidental addiction can be just as dangerous as a nonaccidental addiction.

JOHN: Don't forget that some people use the barbiturate as an escape mechanism. These addicts have trouble sleeping, are compulsive in their behavior, and cannot face reality. They start with one capsule leading to more capsules.

BILL: I believe you hit the high points of the discussion. I would like to re-emphasize what Jimmy Dan said about accidental addiction to barbiturates. Since sleeping pills are better known to the individual than other narcotics, it is important for us to remember the potency of barbiturates and to use barbiturates only under medical supervision. We have not discussed the medical uses of this drug. Jane, what can you tell us?

JANE: When properly used under the supervision of a physician, the barbiturates are valuable as a sedative and hypnotic drug. They have been used medically for many years to relieve pain and induce sleep.

JEAN: Barbiturates, at one time, were used in the treatment of nerve disorders.

## CONCLUSION

BILL: Yes, barbiturates prevent much suffering. But they carry a great threat of sudden death. In summarizing our panel's efforts, let us repeat some of the essential points brought out by our panel. Bonnie, would you like to start?

BONNIE: Barbiturates are often called "goof-balls" by addicts. These "goof-balls" belong to the depressant group of narcotics. They affect the person by making him forget and by placing him in a state of semidream.

**TOM:** Barbiturates are the basis for sleeping pills and are important when used medically.

**JANE:** We should remember to use them under a physician's supervision.

**BILL:** I hope the class has gained some insight into the problem of the "goof-baller" through our panel. Tomorrow, another student committee will tell what is being done to curb the sale of narcotics.

## STUDENT REFERENCES

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## METHODS AND MATERIALS OF INSTRUCTION

Each lesson of the previous chapter included methods and materials of instruction. In order to clarify the meaning of the content, methods and materials of instruction were skillfully used by the teacher of each lesson. At no time did the methods and materials overshadow the content. It is the content that is taught. The methods and materials of instruction are supplementary devices to enhance the pupil's learning.

### METHODS OF INSTRUCTION

The methods are "how" the lesson is done. Many instructional methods can change an uninteresting lecture into meaningful pupil learning experiences. Some of these methods are described.

### EDUCATIONAL TELEVISION

Reaching millions of viewers, educational television regards the viewer as having diversified interests and abilities. It seeks to motivate without any commercial motivation. There are two types of educational television: "instructional or in-school" and "adult programming." "Instructional" television consists of lessons and units of subject-matter fields found in elementary and secondary schools and in college. "Adult programming" includes programs for the general public.

Educational television is transmitted by closed- or open-circuit systems. Closed-circuit television operates over cables like the telephone. It does not require television channels because it does not send the picture and sound through the air. Open-circuit television requires federal allocation of an assigned television frequency. It has wider geographic coverage than closed-circuit television has. The majority of educational television programs for elementary and secondary schools are open-circuit systems. Closed-circuit systems may be used on college campuses.

Videotape is a system of high-quality recording of the sound and

picture of a television lesson on magnetic tape. These tapes are permanent records of the lessons taught, and can be duplicated and used by different television stations. In contrast, the "live" telecasts send their picture and sound simultaneously over two or more educational television stations.

The television teacher must not only be a "master" teacher in knowledge of subject matter and in teaching ability but also adjust to the demands of television and work with the persons who operate television. Even though the television teacher determines what she says and the methods of instruction, the persons operating television advise the television teacher how she can best clarify the subject matter and best use the methods of instruction. The persons who operate television are the television producers, directors, cameramen, lighting experts, studio artists, and other technicians.

Educational television demands precise planning of each part of a lesson by the television teacher. Each part of a lesson has a definite time allotment. The television teacher cannot linger for several minutes to clarify a point of subject matter. Nor can the teacher end the lesson 5 minutes ahead of time. Nor can the teacher wander from the subject matter outlined in the classroom teacher's study guide. The television teacher's personality and enthusiasm for teaching can influence the acceptance of the television teaching. A lesson that is dull and devoid of subject matter ends in a flick of the television dial.

The author of this text was the television teacher in health education, Station KRLN-TV, Austin-San Antonio, Texas, September 25, 1962-January 23, 1963 for weekly telecasts. These telecasts were open-circuit and "live." Following auditions held in the fall of 1961, the television teacher taught preliminary health education lessons before the weekly health education lessons. Study guides for the classroom teacher included the preliminary lessons<sup>1</sup> and weekly health education lessons.<sup>2</sup> The guides consisted of health education lessons with introductory statements, pretelecast activities, vocabularies, telecasts outlined, posttelecast activities, and references for the teacher. Each "live," 25-minute health education television lesson required 30 hours of preparation by the television teacher. Each lesson was reviewed and approved, previous to the telecast, by physicians, dentists, public health specialists, nutritionists, and executive personnel from nonofficial health agencies. The lessons conformed to the recommended health education units for grades 4, 5, 6 by the Texas Education Agency.

<sup>1</sup> Jessie Helen Haag. "Health Education, Grades 4, 5, 6." *Spring 1962 Teacher's Guide, KRLN-TV*. Austin: Southwest Texas Educational Television Council, 1962. pp. 18-27.

<sup>2</sup> Jessie Helen Haag. "Health Education, Grades 4, 5, 6." *Teacher's Guide, 1962-1963, KRLN-TV*. Austin: Southwest Texas Educational Television Council, 1962. pp. 95-121.



In presenting the following health education television lessons, some of the methods of instruction will be given.<sup>3</sup>

## HEALTH EDUCATION

Station KRLN-TV, Austin-San Antonio, Texas

September 25, 1962-January 23, 1963

LESSON NUMBER	TITLE OF LESSON	METHODS OF INSTRUCTION
Lesson 1	"Save Your Vision" from the unit, Care of the Eyes	Demonstration Slides Exhibits
Lesson 2	"Stand Tall" from the unit, Posture	Dramatization Teacher-made posture screening device Demonstration Exhibit
Lesson 3	"Reduce Those Cavities" from the unit, Dental Health	Pupil survey Exhibit Demonstration Slides
Lesson 4	"Let's Try a New Breakfast" from the unit, Breakfast	Problem solving Experiment Demonstration Exhibit
Lesson 5	"Food Fallacies" from the unit, Food Fads and Fallacies	True-false test Demonstration Exhibit Experiment
Lesson 6	"Rubella-Rubeola" from the unit, Measles-Mumps	Invited speaker Exhibit Experiment Slides
Lesson 7	"What about Rheumatic Fever?" from the unit, Rheumatic Fever	Experiment Demonstration Exhibit Slides
Lesson 8	"Positive or Negative?" from the unit, Tuberculosis	Storytelling Experiment Demonstration Slides
Lesson 9	"Emergency Care for Poisoning" from the unit, Household Poisons	Chapter 16 of this text

<sup>3</sup> *Ibid.*

LESSON NUMBER	TITLE OF LESSON	METHODS OF INSTRUCTION
Lesson 10	"Stop Bleeding and Infection" from the unit, Wounds	Problem solving Pupil demonstration Demonstration Slides
Lesson 11	"Is Your Community's Water Safe?" from the unit, Water Purification	Film Exhibit Slides Experiment
Lesson 12	"Have Your Animal Vaccinated" from the unit, Rabies	Question box Demonstration Slides Exhibit
Lesson 13	"Fact or Fiction" from the unit, Health Misconceptions	True-false test Question-answer Experiment Demonstration
Lesson 14	"Marijuana and Heroin" from the unit, Narcotics	Experiment Exhibit Slides Demonstration

Even though the method of instruction mentioned above, for example, demonstration, was listed once for a lesson, it was possible that several demonstrations occurred in one health education television lesson. For each health education television lesson, there were at least 20 different materials of instruction. Many of these materials are mentioned in the second half of this chapter.

## DEMONSTRATIONS

In the lesson, "Why I Take Care of My Teeth," there was a demonstration of tooth brushing. Following the teacher's demonstration, the pupils practiced tooth-brushing procedures in the classroom and brushed their teeth after the midmorning snack and noonday school meal. Demonstrations of American Red Cross First Aid for internal poisoning were given in the educational television lesson, "Emergency Care for Poisoning." As a teaching method, the demonstration can be outlined to include the following:

1. Teacher should be fully acquainted with each phase of the demonstration.
  - a. Verbal explanations accompanying each phase.
  - b. Skills used in each phase.
  - c. Demonstration practiced by teacher before presenting it.

2. All equipment and supplies to be used in demonstration should be within arm's reach of the teacher.
3. Teacher explains "why" the demonstration is being made.
4. Teacher takes each phase of demonstration slowly, carefully, and emphasizes the "how" of each phase.
5. Teacher finishes the demonstration by emphasizing the highlights of the demonstration and the importance of each phase.
6. Teacher repeats the complete demonstration—#3 through #5.
7. Teacher repeats complete demonstration a third time.
8. Teacher assigns two students to work together as "buddies."
9. Students follow the teacher as the teacher demonstrates a fourth time.
10. Students not having a chance to follow the teacher as stated in #9, follow teacher demonstration the fifth time.
11. Students without teacher demonstration practice skills demonstrated by the teacher. Teacher moves around the classroom checking each student's attempts and corrects and approves these attempts.
12. Pitfalls of teacher demonstration:
  - a. The teacher may not be fully acquainted with the verbal explanations and skills necessary for the demonstration.
  - b. Supplies and equipment may be insufficient and not accessible.
  - c. The class may be poorly organized for student practice sessions.
  - d. Classroom space may be inadequate for pupil practice.
  - e. The teacher may not check on students' practice attempts.
  - f. Students' practice attempts may not be included in the evaluation of the students' skills at the close of the unit.

When can the *demonstration* be used in health education? The following are a few of the many ways in which demonstration as an instructional method in health education can be used:

#### American Red Cross First Aid

Bandaging, treatment for shock, control of bleeding, fractures, artificial respiration, treatment of wounds, care of internal poisoning, treatment of simple emergencies, transportation, etc.

#### American Red Cross Home Nursing

Taking temperatures, making up sickbed, preparing a food tray, disinfecting a sickroom, preparing a hot-water bottle and ice pack, etc.

#### Facial skin care

#### Shampooing of the hair

#### Care of the hands and nails

#### Preparation of a vegetable salad as a part of a unit in meal planning

#### Bicycle safety skills

Riding, hand signals, care of bicycle parts, parking bicycle, etc.

#### Weighing and measuring height

#### Tooth brushing

#### Fire drills and disaster self-preservation procedures

#### Safety in handling a gun

- Using a snake-bite kit
- Lifting objects from floor, such as table, chair
- Handling a knife, ax, hammer, saw
- Using a fire extinguisher

The skills involved in these demonstrations depend on the topic of the demonstration. The skills employed in disaster self-preservation procedures differ from those employed for facial skin care.

## EXPERIMENTS

Another method highly successful in health education is an experiment dealing with animal feeding and the effects of different diets on rats. Three diets are used: (1) diet of enriched whole-wheat bread and water; (2) diet of whole pasteurized milk and water; and (3) diet of enriched whole-wheat bread, whole pasteurized milk, and water. Teachers should be familiar with the following information before attempting an animal-feeding experiment.

1. Where to obtain rats
2. Materials used in experiment
3. Materials used in building cages
4. Building cages
5. Planning experiment with students
  - a. Purpose
  - b. Number of rats and condition of each rat at the first day of the experiment
  - c. Diet of each rat
  - d. Conditions of rat to be observed daily
  - e. Handling and weighing rats
  - f. Recording daily weight of rats
  - g. Daily cleaning of cages
  - h. Precautionary measures
6. Conclusions drawn from experiments

Many health education lessons can utilize experiments. Experiments showing the effects of water filtration were included in the lesson, "Is Our Community's Water Safe?" Other possible experiments are testing the reaction time and hand-eye coordination of an abstainer of alcoholic beverages and of a problem drinker, preparing homemade butter, making a homemade fire extinguisher, showing the amount of carbohydrates in food, indicating tars and nicotine during smoking, and hatching a chick from a fertilized hen egg.

## FIELD TRIPS

Community facilities can be utilized for field trips in health education. Some of the community facilities to be used as field trips are the water-purification plant, local health department, bakeries, dairies, restaurants,

food-processing plants, community voluntary health agencies, police department, civil defense headquarters, self-service grocery stores, and sewage-disposal plants. The teacher should be familiar with seven procedures necessary to a field trip. First, the teacher should visit the establishment several weeks before the class field trip. At that visit, the purpose of the field trip should be explained and arrangements made to secure a guide. The teacher should be acquainted with the establishment following the visit. At the time of the teacher's visit, the hour best suited to the establishment's work schedule can be suggested for the field trip. Second, the school principal should be informed that the field trip may take more time than originally allotted. The school principal must approve and give permission for the expedition. Third, safety precautions should be taken by the teacher before the trip. They might include bus transportation, chaperons, directions, and police escort, if needed. Fourth, a check list should be made by students, after the teacher has explained each phase of the establishment's work and before the students go on the field trip. The student check list will serve to pinpoint the important highlights of the trip. Fifth, students should have questions to ask the guide during the trip. Sixth, discussion should be held in the classroom on the highlights of the trip. Seventh, a letter of appreciation should be sent to the manager of the establishment by the students. If the field trip is to be meaningful, each student should contribute to the class discussion to make sure that the purpose of the trip is clearly understood.

## DRAMATIZATION

Skits, plays, pageants, monologues, marionette and puppet shows, charades, and pantomimes are some of the possible forms of dramatization. The hand puppet used at the conclusion of the lesson, "Why I Take Care of My Teeth," acquainted the second-graders with the film story. Dramatization can be used in many health education units of instruction. It can be applied to units of mental health, nutrition education, family life education, care of the human body, safety education, and consumer health. A skit can portray the acceptance of a classmate with a nonremediable health condition. A play can emphasize the importance of a well-balanced breakfast. Pageants can reveal measures of preventing fires in the home, school, and community. Monologue might be used to evaluate advertising of a charlatan. Marionette and puppet shows have been used widely in primary grades. Charades and pantomimes lend themselves to units of health education at the junior high school level.

## INVITED SPEAKERS

Community co-workers can be used as speakers supplementing the content of the health education lesson. Before presenting the speaker to pupils, the teacher should visit the co-worker's headquarters. A member of the

co-worker's staff is usually designated to speak in schools. Some nonofficial health and safety agencies have speakers for different topics and age groups. City police and fire departments appoint staff members to work with teachers on safety problems. During the visit, the teacher can inform the speaker of the purpose of the speech, the age level of the students, their interests in the health education topic, the content of the health education unit, and the best time for the speaker's visit. Audiovisual aids borrowed from the co-worker's headquarters should be known to the speaker to avoid duplication of use. Pupils should be familiar with the speaker's topic and should have questions to ask the speaker after his speech. Class discussion can follow the question period. A summation of the pertinent parts of the speech can be made by a student chairman or by the teacher. A letter of appreciation should be sent to the co-worker's headquarters following the speaker's visit.

### PROBLEM SOLVING

As a method of instruction, problem solving can be effectively used in health education. Preceding lessons, as well as the units of health education, have many possibilities for problem solving. An example showing the effectiveness of this method of instruction is a series of American Red Cross First Aid cravat and triangular bandages for different types of wounds. With each demonstration of a bandage, the teacher explains "why" the bandage is applied to the particular type of wound. After the students have practiced making the bandages, a series of "make-believe" accidents occur, resulting in different kinds of wounds. The students are to apply the correct bandage to each wound depending on the type of wound and its location.

### OTHER METHODS OF INSTRUCTION

*Oral reports* can be the result of a pupil or committee project, as in the lesson, "Is Our Community's Water Safe?" Oral reports can supplement the content of a health education lesson. One lesson of a cancer unit for high school students might include oral reports on cancer research. A committee of students might report on the World Health Organization during a unit on world health problems. Oral reports should utilize such references as *Today's Health*, *Safety Education*, and publications of official and nonofficial health agencies.

Many teachers prefer *group discussion* during health education lessons. The group discussion can result from a short lecture or can be stimulated by questions from the teacher to the class. There are many ways in which the teacher can create effective group discussion. She may, for example, keep the main topic under discussion before the group, encourage the participation of all students, use frequent summaries as the discussion progresses, and answer a pupil question with a question.

In the previous chapter, the *question-and-answer*, *exhibit*, *panel*, and *student project* were illustrated as methods of instruction in "Is Our Community's Water Safe?" "Case against Tobacco," and "'Goof-Baller'—A Growing Menace." The question-and-answer method can be employed by the pupils as well as the teacher. Exhibits can clarify the explanation of the teacher or pupils. A panel can utilize student reports as the basis for the discussion among panel members.

Other health education methods of instruction are the *lecture-discussion*, *debate*, *standardized and teacher-made health and safety measuring devices* (Chapter 22), *storytelling*, *classroom games*, and *pupil surveys*. Classroom games may include the many varieties of pencil-and-paper games, quiz programs, variations of spelling "bees," and buzz sessions. Pupil surveys can include food servings left at the noonday school meal, hand washing before entrance to the lunchroom, bicycle accidents among pupils, accident and fire hazards within school buildings, and facial skin infections among pupils. *Films*, *filmstrips*, and *slides* will be presented in the next section of this chapter, even though they can be classified as methods of instruction.

The *question box* can be used for written health education questions given by students not wishing to be identified. Used during a unit on family life education, the question box can indicate to the teacher health problems students wish to have discussed. It was used in the lesson, "Case against Tobacco," Chapter 16.

During elementary and secondary direct health education, many methods of instruction are used by the teacher, pupil, and teacher-and-pupil. A teacher may progress from lecture-discussion to demonstration, then to question-answer, and after this, to student projects in problem solving.

## MATERIALS USED IN HEALTH EDUCATION

Health education materials of instruction are unlimited. The materials are objects, not subject matter. Only materials used most frequently will be mentioned in this section.

*Community resources* can clarify explanations of health education topics. During instruction on community health problems, the water filtration plant, food processing and frozen-food locker plants, bakeries, restaurants, local health department, and sewage-disposal plant could be used. Supermarkets, dairies, school and hotel kitchens, and drive-in eating establishments can be community resources during nutrition education.

chapters should not overlook police departments, fire stations, civil de-

washing facilities outside the lunchrooms, and handle the toilet room facilities. School grounds, playing fields, auditoriums, library, gymnasium, laboratories, and shops, as well as classrooms, corridors, and stairs, are utilized in safety education.

Black-and-white or color sound *films* have influenced the content and methods of health education. The number of health education films is countless. Validity of the health information, techniques employed to convey it to the audience, scope of the information covered, adaptability of the information to the health needs and interests of a particular age level and community, possibilities of use with other health education, and innumerable other criteria should produce continuous evaluation of films. Before previewing any film, a selection of several films appropriate to the health education content should be made. A film-preview evaluation sheet should be accessible to the teacher so that the teacher can indicate:

- Title and source of film
- Color or black and white
- Topic covered on film
- Time length
- Defects of film
- Terminology in film—valid, up-to-date, possible correlation with health education content, and specific facts
- Techniques employed to convey health information
- Scope of health information
- Motivating qualities of film
- Sound—is it clear and distinct?
- Word usage per grade level
- Pictures appropriate to the health education topic
- Possibilities of use as a film, etc.

A second previewing should follow the first teacher previewing before final selection of the film is made. The teacher orders the film and gives the time, date, and location of school and classroom where the film is to shown.

A complete orientation to the topic covered in the film should be given to students before the film is shown. During the orientation, specific health information should be emphasized so that students are aware of what facts they should gather from the film. Some teachers summarize the topic of the film by an outline of the film or film highlights placed on the chalkboard. Regardless of the technique employed, the orientation should be thorough and fully descriptive.

The teacher might have available an evaluation sheet showing the students' reactions. Could the students hear and see the film from all parts of the classroom? What highlights of the film, pertinent to the health education content, did the students overlook after the second showing? Did



the students gain any specific health information from the film? Did the students like the film?

A second showing of the same film is valuable at every grade level, because students gain more specific information from two viewings than from one. Following the second showing, students can answer prepared lists of questions or can complete check lists. Some teachers prefer the group-discussion method to prepared questions or check lists. Students should have an opportunity to reveal whether they did or did not gain specific health information, whether they agreed or disagreed with the film topic, and whether they wish to raise questions concerning the film's information.

In addition to films, *filmstrips* and *slides* are vital to health education. They can be teacher- or pupil-prepared, as well as commercially made. Teacher-prepared slides of silhouettes depicting students' posture and body mechanics can be an excellent media for showing deviations in lateral and anterior-posterior posture. Facial features of students should be blacked out and the students should have suitable attire.

In schools that cannot purchase human anatomy and physiology charts for health education, teacher-prepared slides of drawings from human anatomical and physiological texts can be substituted for the charts. The same drawings might be used with an opaque projector, which enlarges the drawing on the chalkboard, where it can be traced. The filmstrip can be a record of a field trip to the water-filtration plant, or a series of self-preservation procedures to be followed during a disaster drill.

### *Other Materials of Instruction* These materials include:

Radio	Charts
Television	Maps (spot, geographical)
Recordings	Graphs (area, bar, pictorial)
Transcriptions	Flannelgraphs and feltboards
Dioramas	Posters
Models	Flat or still pictures (photographs, magazine pictures)
Specimens	Manikins
Microscopic slides	Newspaper clippings
Agar plates	Nostrums
Microscopes	Decals and certificates
Materials used in laboratory experiments	X-ray viewer
Puppets	Platform scales
Marionettes	Visual and hearing screening instruments and records
Dramatization materials (scripts, costumes, props)	Health records
Cartoons	Shadow boxes
Flash cards	American Red Cross first-aid equipment
Diagrams	

Bicycles, guns, swim fins	Salk and Sabin vaccines, insulin, and other vaccines with syringe, alcohol, and cotton
Small power-driven automobiles	Classroom games materials
Dental health materials (full-mouth x-rays, mouth mirrors, probes, etc.)	Bulletin boards
Advertisements	Chalkboards
Samples of group voluntary insurance policies, e.g., hospitalization	Scrapbooks
Samples of barbiturates	Standardized and teacher-made health knowledge, attitudes, and practices measuring devices
Reaction-time testing devices	Check lists and questionnaires
Nutrition education materials (food samples, exhibits, laboratory equipment analyzing foods, labels from food products, etc.)	Rating scales and surveys
Chest x-rays and tuberculin testing materials	Pupil diaries
	Interest-inventory scales
	Question boxes
	Samples of addicting drugs
	Petri plates
	Homemade movies

*Printed health education materials* include a wide variety of bulletins, pamphlets, morbidity tables, periodicals such as *Today's Health and Safety Education*, textbooks, single mimeographed or printed pages, research reports, and medical dictionaries. The effectiveness of pamphlets needs continuous teacher evaluation. Some of the questions raised about the effectiveness of pamphlets:

1. Has a qualified person or agency been the author of the pamphlet?
2. Is the subject matter or content of recent date?
3. Is the subject matter or content specific and detailed?
4. Is the type large enough to read?
5. Are references given?

Not mentioned among the health education materials of instruction are the *health museums* found in various sections of the nation. In these museums, elementary and secondary teachers can gain a wealth of ideas for teaching methods and materials. The "try-it-yourself" exhibits, three-dimensional models, automat serving the "meal of your choice," and quiz games are a few of the many devices used by health museums. Popular with persons of all ages, these museums have contributed greatly to the health education of the nation.

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**PART IV**

**ORGANIZATION AND  
ADMINISTRATION OF THE  
SCHOOL HEALTH PROGRAM**

SUPERINTENDENT OF  
SCHOOLS' RESPONSIBILITIES

Many misconceptions exist about who shall organize and administer the school health program. Some school and community personnel believe that the total school health program should be administered by the local health department. This concept may arise from misconceptions of the functions of nurses in school health services, which is one part of the total health program. Usually, the misconceptions can be removed when the following questions are asked. Shall a school health program consist of school health services, healthful school living, and health education? Who is responsible for the development of the total school health program? Who supplies funds for the total program? Do the local public schools or the local health department have facilities for the total program? With whom do state education departments work? Who has the equipment and supplies for the total program? Who employs the teacher, principal, and supervisor of health education? Do the local public schools or the local health department provide regularly scheduled health education, ages 6 through 18, meeting requirements of state education departments?

In a 1950 survey of health education in the secondary schools of the United States, Kilander<sup>1</sup> reported that 33 states required health education in the secondary schools. Credit in secondary school health education was counted toward graduation in 44 states. In a 10-year study of the 50 states and the District of Columbia by Haag,<sup>2</sup> teachers of health education have been certified for their specialized preparation in secondary schools. This specialized preparation has been separate from the preparation of teachers of physical education, health and physical education, school nursing, and

<sup>1</sup> H. F. Kilander, *Health Instruction in the Secondary Schools—An Inquiry into Its Organization and Administration*, Pamphlet No. 110, Washington, D.C.: U.S. Printing Office, 1951, pp. 19-20.

<sup>2</sup> Jessie Helen Haag, "Certification Requirements in Health Education, 1949-1959," *Research Quarterly*, 32:26-33 (March 1961).

the biological sciences. The teachers of health education were not physicians, dental hygienists, or nurses. Instead, they were teachers of health education for secondary schools.

As for school health services, at least three investigations have disclosed that school services are controlled by local boards of education. In 1950, Kilander<sup>3</sup> revealed the extent of school health services in 2886 cities. In these cities, 60.2 percent of the health services were administered by local boards of education. Later, Streit<sup>4</sup> surveyed school health services in 108 cities with a population of 100,000 or more. Of the 108 cities, 67 indicated that boards of education paid salaries of school health services personnel. In 1958, Neilson and Irwin<sup>5</sup> reported that local boards of education provided for school health services in 95 percent of the school systems of this study. Three city population groups were used, ranging from 10,000 to 499,999. One of the conclusions of this study was that local boards of education offer more complete school health services than do other agencies.

## BOARDS OF EDUCATION

The legal control of the total school health program is placed with the local board of education, which delegates the organization and administration of the program to the superintendent of schools. Funds for the three parts of the school health program are designated in the board of education budget. These funds may provide the facilities, equipment, and supplies of the program as well as the salaries of school health services personnel. School health programs can be developed within school systems of all sizes. In each instance, the local board of education relies on the school superintendent for his knowledge, interest, and leadership in developing the total school health program.

## SUPERINTENDENT OF SCHOOLS

It is possible that a school system may have no professionally prepared teacher of health education and no administrative or supervisory personnel familiar with the total school health program. Also, it is possible that the school nurse, employed by the board of education, may have little understanding of her functions in school health services. Thus the development of the total school health program depends on the school superintendent. Some of his general functions in organizing and administering the school health program will be mentioned.

<sup>3</sup> H. F. Kilander. *Health Services in City Schools*. Bulletin 1952, No. 20. Washington, D.C.: U.S. Government Printing Office, 1952, p. 11.

<sup>4</sup> W. K. Streit. "Health Services in City School Systems." *Journal of School Health*, 26:111 (April 1956).

<sup>5</sup> Elizabeth Neilson and Leslie W. Irwin. "Analytical Study of School Health Practices in the United States." *Research Quarterly*, 29:417 (December 1958).

## TOTAL ADMINISTRATIVE CONTROL

The superintendent of schools must have total administrative control over school health services, healthful school living, and health education. In the study by Neilson and Irwin,<sup>6</sup> the superintendent of schools was responsible for developing school health services. Even in school systems with full-time school physicians, the superintendent of schools had total administrative control of the school health program. Other investigations have revealed the same evidence. The publications of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, the American Medical Association's *Suggested School Health Policies*, and the American Association of School Administrators<sup>7</sup> have emphasized this vital role of the school superintendent.

In school systems with a full-time school physician, the superintendent of schools maintains total administrative control over the physician's functions. The physician, at no time, may assume the functions of the school superintendent in the school health program.

Regardless of the number of nurses employed by the local board of education, the school superintendent has total administrative control over all functions of school nurses. If there is a director or supervisor of school nurses, she is responsible to the school superintendent for all of her activities in school health services.

Dental hygienists, speech therapists, part-time dental specialists, psychiatrists, or other health services personnel must be aware that the superintendent of schools has total administrative control of the school health program. No member of the health professions can assume that he has been delegated the responsibilities of the superintendent of schools by the local board of education.

The concept that the school health program is the responsibility of the local health department, or of a physician, or of a nurse is basically illegal in the administration of the public elementary and secondary schools. The concept arises when health services personnel are not familiar with the legal basis of state education departments and local boards of education.

## APPROVAL OF POLICIES AND PROCEDURES

The superintendent of schools must approve of all policies and procedures affecting the total school health program. If the school superintendent delegates responsibilities concerning the school health program to the health coordinator or supervisor of health education, every policy and procedure of the total program should be known to the superintendent.

<sup>6</sup> *Ibid.*, p. 421.

<sup>7</sup> American Association of School Administrators. *Health in Schools* (Twentieth Yearbook). Washington, D.C.: National Education Association, 1951.

ent. The complexity and scope of the total health program necessitate the superintendent's approval. These policies and procedures can affect every phase of school health services, healthful school living, and health education. Procedures for exclusion of a pupil with communicable diseases, readmission of a pupil following recovery from communicable diseases, required immunizations, and emergency care should be in written form and approved by the local board of education and the superintendent of schools.

## SUPERVISION OF HEALTH EDUCATION

With the increasing demands for health education in elementary and secondary schools, the wise superintendent will employ professionally prepared teachers of health education with supervisory credentials. In-service health education can be effectively conducted only by teachers whose major preparation has been school health education and whose teaching experiences have been in the same field. Because many elementary and secondary school health education textbooks are *not* indicative of health education, elementary and secondary school teachers need a tremendous amount of assistance in health education. Misconceptions and out-of-date information about health, poor curriculum planning of health education, and low-quality public school health education textbooks have created curriculum problems needing the assistance of professionally prepared teachers of health education.

The supervisor of health education may find that teachers do not attempt to discover the pupil's health needs and interests as a basis for determining the health education content. The supervisor may find that teachers show little variation in teaching methods and in the use of materials of instruction. The subject matter may be out of date and meaningless, and there may be no evaluation of health education. Many elementary teachers and secondary teachers assigned health education have often accepted the topics in textbooks without realizing that the topics may be duplicated, are out of date, and have little influence on the pupil's health practices, attitudes, interests, and knowledge. The functions of the supervisor of health education will be discussed in Chapter 19.

## FUNDS

The superintendent of schools should suggest that funds be allotted in the budget of the local board of education to meet the current expenses of the school health program and of the emergency situations arising within the program. Travel expenses of school nurses, other health services personnel, and the supervisor of health education must be considered. There should be funds to buy vision and hearing screening devices, nurses' and American Red Cross first-aid supplies, and printed records of



the pupil's health status. School lunch activities will have a budget, outlay of expenses, and different sources of funds. Costs of all instructional materials needed in elementary and secondary school health education must be included. Chapter 20 will specifically mention the funds of the school health program.

## FACILITIES

Many types of facilities are needed for school health services, healthful school living, and health education. A health service unit may be found within a modern school building. In secondary schools, there should be health teaching laboratories for teacher demonstrations, pupil practice sessions, experiments, and student projects. School lunchrooms must have specific facilities in order to provide a Type A lunch or a nutritious noon-day meal. A safe and healthful school environment is dependent on the school's facilities. Further information regarding facilities will be included in Chapter 20.

## EQUIPMENT AND SUPPLIES

The school health program requires not only facilities but also equipment and supplies within these facilities. The budget of the local board of education must include funds to purchase equipment and supplies needed in school health services, healthful school living, and health education. A wise superintendent of schools may delegate to the supervisor of health education the responsibility of compiling the equipment and supplies needed in the health program. Inventories and requisitions of equipment and supplies must include health education as well as school health services. Specific equipment and supplies within the school health program will be discussed in Chapter 20.

## LEGAL REGULATIONS

The public school health program is affected by many types of legal regulations. First, there are state-wide regulations established by state boards of education and adopted by state legislatures. Second, there are the regulations of the local boards of education. Third, there exist state-wide requirements established by state boards of health and adopted by state legislatures. Fourth, local health departments may enact regulations affecting the health of all public school pupils and personnel employed by local boards of education. Fifth, there are public laws enacted by the Congress of the United States, such as Public Law 396—National School Lunch Act.

Legal regulations, affecting the public school health program, may be mandatory or permissive. An example of a mandatory state-wide regulation established by state boards of education is the requirement of a medi-

cal examination and freedom from tuberculosis or other communicable diseases as a prerequisite for obtaining a provisional teaching certificate. An example of permissive state-wide regulations established by state boards of education is the method of notifying parents about a pupil's remediable or nonremediable health condition. Most educators prefer permissive legislation.

State-wide or local legal regulations that affect the public school health program vary from state to state and from community to community. These legal regulations involve:

1. Administration of the school health program
2. Funds for the program
3. Construction of school buildings
4. Heating and ventilation, lighting, water supply, sewage disposal, plumbing, garbage and waste disposal, etc.
5. Safety regulations against fire and accident hazards
6. Medical examinations and diagnostic procedures and laboratory tests of all school employees
7. Certification requirements of secondary school teachers of health education and supervisors of health education
8. Health education preparation of elementary and secondary teachers as a prerequisite for provisional teacher certification
9. Vaccination procedures of school children
10. Exclusion of pupils with communicable diseases from elementary and secondary schools
11. Readmission of pupils recovered from communicable diseases to the elementary and secondary schools
12. Tuberculosis screening of school children
13. Medical examinations of pupils
14. Medical treatment of pupils
15. Health records of pupils and school employees
16. Parents' being notified of child's remediable or nonremediable health condition
17. Health requirements of food workers in the school lunchroom
18. Sanitation of food preparation and serving and of school lunchroom facilities and equipment
19. Health education in elementary and secondary schools including:
  - a. Alcohol, narcotics, and tobacco
  - b. Physiology and hygiene
  - c. Fire prevention and safety education
  - d. Nutrition, etc.
20. Professional preparation, standards for employment, and functions of registered nurses, physicians, dentists, dental hygienists, and other health services personnel employed by local boards of education
21. School health councils
22. School bus transportation

Many of these legal regulations, affecting the public school health program, are universally accepted. As of 1956, 49 of the 50 states have statutes that require instruction in the topics of alcohol and narcotics. Forty-six of the 49 statutes make the instruction mandatory. Thirty states specify that alcohol and narcotics are to be taught in health education, hygiene, or physiology. No specific time allotment for the instruction of alcohol and narcotics is indicated in 33 states. The teaching of the effects of alcohol and narcotics on the human body is required in 44 states. Thirty-five statutes suggest how the instruction is to be given.<sup>8</sup>

## SECONDARY SCHOOL HEALTH EDUCATION

The school superintendent should recommend at least two semesters of health education meeting 5 days a week in the secondary schools. The President's Council on Youth Fitness gives these statements:<sup>9</sup>

Specific courses in health and safety education should be offered in the junior and senior high school and appropriate texts and instructional materials provided.

Health education teachers at the secondary level should have a major in health education or an undergraduate minor in health education supplemented by additional graduate study in that field.

The National Conference for Cooperation in Health Education<sup>10</sup> has suggested at least two semesters of health education during the seventh, eighth, or ninth grades and at least two semesters during the eleventh and twelfth grades. Regularly scheduled health education in the secondary schools has been recommended by many professional groups for the past 25 years. Most school superintendents are aware that health education cannot be adequately taught as a 6-week unit in physical education, as 3-weeks unit in science, or correlated with other subjects.

## NOONDAY SCHOOL MEALS

The superintendent of schools should be aware of the values of sound dietary habits among pupils and school personnel. Many of these dietary habits are promoted by the noonday school meals. With the enactment of the National School Lunch Act in 1946, elementary and secondary schools may receive assistance from the federal government through state educa-

<sup>8</sup> Everett W. Woodward. "An Analysis of the State Laws and Directives Pertaining to Narcotic and Alcohol Education and Provisions for Their Fulfillment in Public Schools of the United States." Unpublished Master's thesis, University of Washington, 1956.

<sup>9</sup> President's Council on Youth Fitness. *Youth Physical Fitness: Suggested Elements of a School-Centered Program*. Washington, D.C.: U.S. Government Printing Office, 1961, p. 11.

<sup>10</sup> National Conference for Cooperation in Health Education. *Suggested School Health Policies* (3d ed.). Chicago: American Medical Association, 1956, p. 12.

tion departments. The assistance may be funds and surplus foods, such as milk and milk products, fruits and vegetables, meat, flour, and cereal grains. The noonday school meal and supplementary feeding provide many advantages to the pupil who has undergone recent surgery, has had prolonged illness, and has nutritional deficiencies. Further advantages of school nutrition were presented in Chapter 9.

## PUBLIC RELATIONS

The school health program should be accepted by the superintendent as an integral part of the school system's public relations. A diversity of school and community contacts exists within the school health program. The supervisor of health education and school nurses may desire uniform procedures when working with official and nonofficial health agencies.

Medical and dental examinations by family physicians and dentists necessitate pupil absence from school for appointments. How well do the public-relations procedures handle these absences? Home visits by the school nurse may uncover the need for community assistance to a family. What are the methods of contacting community agencies and to what extent may the public schools work with these agencies?

Controversial issues can occur in school health services and health education. Teacher observations of possible pupil health difficulties create many questions among parents. Notices sent to parents giving the results of vision and hearing screening and tuberculin testing can create parental anxiety. Emergency care procedures and exclusion of a pupil with communicable diseases need to be understood and accepted by parents. Many controversial topics in health education need to be included in the school system's public relations. It is possible that parents can misinterpret menstrual hygiene, mental illness, alcohol and alcoholism, venereal diseases, quackery, fluoridation of drinking water supplies, immunization procedures, and other health education units of instruction. The acceptance of health education in elementary and secondary schools by the community depends on the school superintendent's public-relations policies and procedures.

the school instructional staffs. School health concepts are held by family physicians and dentists, professional personnel in local health departments, workers in nonofficial health agencies, and citizens with no children in the public schools. Suggestions may be given by family physicians. These suggestions may need interpretation, however, for without interpretation they may go unheeded. Health education in elementary and secondary schools needs considerable explanation because of the concepts of "physiology and hygiene" held by some community personnel.

## IN-SERVICE HEALTH EDUCATION

Because our teacher education institutions have not permitted a sufficient time allotment in the preparation of elementary and secondary school teachers for their functions in the school health program, continuous in-service health education must be provided. The in-service health education will include school health services, healthful school living, and health education. Particularly, health education will demand a great deal of in-service education. Supervisors of health education spend the greater part of their time providing elementary and secondary school teachers with the subject matter of health education. Much of the in-service education by the supervisor is a series of direct contacts with the individual teacher. In addition, workshops held during the school year can focus attention on the over-all curriculum planning of health education, grades 1 through 12. Since health education subject matter is changing from day to day, the individual teacher depends on the professionally prepared supervisor of health education to keep her informed.

In-service health education is usually requested by school nurses to assist them in school health services. Workshops, institutes, and seminars can be organized to offer the school nurse up-to-date information on many health problems of children and youth. It is of vital importance that the school nurse be well-informed about the latest techniques of tuberculin testing, recognition of the emotionally disturbed child, types of children in special education, assistance from community official and nonofficial health agencies, and specific community health problems. Supervisors of health education encourage school nurses to attend workshops in health education planned for teachers.

## COOPERATION WITH THE LOCAL HEALTH DEPARTMENT

The superintendent of schools should cooperate with the local medical officer and public health personnel in measures devised to control disease. There should be procedures for the exclusion of the pupil with communicable diseases and for the readmission of the pupil following recovery. Cases of impetigo, ringworm, measles, influenza, scarlet fever, chicken pox, whooping cough, and other diseases among excluded pupils should

be reported to the local health department. Cooperation with the local health department can be secured when there are school measures controlling disease by proper disposal of garbage, waste, and sewage; by use of purified drinking water; and by other sanitation procedures. Adequate tuberculin testing, immunization procedures for entrance into local public schools, and cooperative procedures among school and public health nurses can foster excellent relations with the local health department.

## SCHOOL HEALTH COUNCILS

The school superintendent should be an active member or appoint an administrative official to represent the administrative staff on the school health council. The supervisor of health education may be delegated this responsibility by the school superintendent. School health councils assist in solving school health problems as affecting pupils and school personnel. If there is no professionally prepared teacher or supervisor of health education, the school superintendent should participate actively in the council's actions. Because the health council has its membership from the school and community, community health problems can be brought to the attention of the school superintendent. In addition, the superintendent can discover community personnel interested in school health. The community health council can assist the school superintendent in making known community personnel interested in school health through the school representative on the community health council. Chapter 21 will present more information concerning school health councils.

## EVALUATION OF THE PROGRAM

The superintendent of schools must evaluate the school health program for effectiveness and growth. School health services, healthful school living, and health education should be evaluated. Many questions can be asked of the total school health program.

Evaluation will determine the status of leadership in the total program. Is the leadership effective or ineffective? Does the leadership attempt to coordinate school health services with health education? Does the superintendent clarify the purposes of the total school health program? Does the leadership promote teamwork among school and community personnel?

The need for in-service health education and professionally prepared teachers and supervisors of health education will be disclosed through evaluation of the school health program. Does health education contribute to the pupil's health attitudes, practices, interests, and knowledge? Is there a planned health education curriculum based on the pupil's health needs and interests for grades 1 through 12? Is the subject matter of

health education up to date and valid? What controversial health education units are taught? Are there planned facilities for health education in the secondary schools?

The five-year School Health Education Evaluative Study<sup>11</sup> in the Los Angeles area revealed significant findings. School administrative personnel were aware of the need for effective health education. In the evaluation of health education, the team approach was successful. Through evaluation, objectives in terms of health knowledge, attitudes, and practices were formulated. Weaknesses and strengths of health education were discovered. Very few total school health programs were evident. School health services were considered to be adequate. The study revealed the lack of valid evaluation instruments for the educational levels of this study. Special instruments were then prepared. Direct instruction (daily health education for two semesters) at the high school level showed a significance difference, statistically favorable, when compared with other curriculum patterns. Teachers, in participating schools of the study, felt the need for more school health education in their preservice preparation. Previous to and at the close of the study, testing of health knowledge, attitudes, and practices revealed positive significant changes in pupils. The justification of health education in the curriculum was firmly established by the schools participating in the study.

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<sup>11</sup>Edward Johns, "The School Health Education Evaluative Study. Los Angeles Area: An Example of a Modern Evaluation Plan." *Journal of School Health*, 32:5 (January 1962).

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## **SCHOOL AND COMMUNITY PERSONNEL IN THE HEALTH PROGRAM**

Teamwork is necessary among school and community personnel to develop the total school health program. Each person should understand his functions and the importance of those functions. Many family physicians and dentists will be involved in the program. Parents are team members, and pupils and school personnel share in the development of the program. Many community co-workers contribute to the health program in schools. When a health coordinator or supervisor of health education is employed, he brings together the functions of school and community personnel to develop the health program. Where there is no health coordinator, the school superintendent has the task of developing teamwork. Without teamwork, the school health program degenerates to a few unrelated, fragmentary actions of spasmodic concern to schools and communities.

### **HEALTH COORDINATOR OR SUPERVISOR OF HEALTH EDUCATION**

The main functions of the health coordinator or supervisor of health education are to develop the total school health program and to strengthen health education. In developing the program, the coordinator must bring together the parts of the program within a school building and within a school system. In strengthening health education, he must provide continuous in-service health education so that health education is accepted as the most important subject-matter field at all grade levels.

These mammoth tasks require that the health coordinator or supervisor of health education have the equivalent of the undergraduate preparation of the teacher of health education. In addition, the coordinator must complete graduate studies in school health education beyond the bachelor's degree. Areas of the graduate program in the specialized school health education core include research in school health education; organi-

zation and administration of the school health program; supervision of health education; curriculum problems in health education; problems in the school health program; in-service education, evaluative criteria, health counseling, and legal liability and regulations; graduate subject-matter concentration; consumer health, mental hygiene, dental health, nutrition, and public health; and internship as a health coordinator and as a supervisor of health education. The program director for the graduate studies should possess an earned doctorate with graduate preparation similar to that required of the health coordinator or supervisor of health education. The program director should have experience as a school health coordinator, supervisor of health education, or as a teacher of regularly scheduled health education in secondary schools.

The specific functions of the health coordinator or supervisor of health education are that he:

1. Works with the superintendent of schools in the organization and administration of the school health program
2. Supervises health education, grades 1-12
3. Serves as a liaison agent between the school personnel and the professional health services and public health personnel
4. Coordinates school health services with healthful school living and health education
5. Establishes the in-service health education, grades 1-12
6. Establishes and guides school health councils
7. Works with health services personnel, employed by the board of education, in developing school health services
8. Works with school principals in maintaining a healthful and safe school environment, adequate school nutrition, and promotion of the health of school personnel
9. Assists in the development of public relations necessary for the school health program
10. Coordinates the services of community co-workers in the school health program
11. Reports to the superintendent of schools the strengths and weaknesses of the total school health program in specific school buildings and in all schools of that school system
12. Evaluates the total school health program on a day-to-day basis

Of these specific functions, the supervision of health education is the most important. It is through supervision that a planned progression of health education is developed, health education is related to school health services and healthful school living, and health education becomes the most important subject-matter field. Duplication of subject-matter is avoided. Health education subject matter is adapted to the health needs and interests of elementary and secondary school pupils. Continuity of

At the National Professional Preparation Conference in 1962, these statements were given regarding the specialized curriculum in health education:<sup>1</sup>

3. Prepare the student to understand and know how to determine and utilize health needs and interests of children and youth in the curriculum development.
4. Enable the student to understand the total school health program and the responsibilities of various school and community personnel involved as well as to develop the necessary skills to perform his responsibilities.
5. Give the student a thorough comprehension of the content areas included in the scope of health instruction and ways of organizing the content for teaching and learning experiences.
6. Provide for the development of skills in the use of a variety of teaching methods and materials that motivate the learner to translate knowledge into desirable health behavior.
7. Provide the student with a knowledge of the community resources that contribute to health and a knowledge of how to use these resources.
8. Present health and safety problems not as isolated learnings but rather in an integrated context which helps the learner understand their personal, social, political, and cultural implications.
9. Develop an understanding of the teacher's role in maintaining and promoting pupil health and safety, including the development of skill in pupil health appraisal procedures.
10. Develop in the professional student an appreciation for the importance of a high level of health as basic to the pursuit and attainment of intellectual skills.

During the freshman and sophomore years of the preservice preparation, the program director with the assistance of other faculty members should be continuously observing, compiling data, and conferring with the future school health educator. Some of the school health educator's personal characteristics are:

- Well-integrated and dynamic personality
- Desirable health habits
- Well-developed safety skills
- Ability to get along with many types of people
- Possession of initiative and dependability
- Sensitivity to pupil needs and interests
- Ability to lead in certain circumstances and to follow in others
- Enthusiasm for and strong beliefs in school health
- Possession of work habits indicating efficiency and orderliness
- Eagerness to obtain the wealth of health information he must possess and evaluate

<sup>1</sup> American Association for Health, Physical Education, and Recreation. *National Conference for the Professional Preparation in Health Education, Physical Education, and Recreation Education*. Washington, D.C.: The Association, 1962, p. 42.

laboratory for discovering pupil dietary habits and for improving these habits through nutrition education.

Misconceptions about health have no place in elementary school health education. They can be removed only by the teacher's willingness to learn up-to-date, valid, and specific health education subject matter. Teachers soon find that the public school health education textbooks do not contain the information needed by the fourth-, fifth-, and sixth-grade child about many individual, family, and community health problems. There is a tremendous need that the elementary teacher accept the reality of pupil emotional disturbances, nutritional deficiencies, visual and hearing difficulties, posture conditions, skin infections, dental health problems, irremediable health conditions, and a wide variety of communicable diseases. In addition, the teacher must recognize that community health problems and accident prevention are just as important as individual health problems.

Health education in the modern elementary school depends on a teacher whose preservice preparation included worth-while school health education courses. The aim of these courses is to encourage the teacher to use health education to develop a high level of health among all pupils.

Many professional groups have vigorously supported the inclusion of school health education courses in the preparation of the elementary teacher. Also, these groups have urged that the school health education courses be separated from courses in physical education. Some of these professional groups have been the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, the American School Health Association, and the American Association of School Administrators.

Some states have state-wide legal regulations that require school health education courses in the preservice preparation of elementary school teachers. Other states face indignant groups of the health professions demanding the reason for the reluctance among teacher education institutions to develop and maintain school health education courses.

## PHYSICAL EDUCATION TEACHER

At the National Professional Preparation Conference in 1962, it was strongly recommended that the priority areas in *health education* for the physical education major include: <sup>2</sup>

1. Personal and community health
2. The school health program (including health instruction, health services, and healthful school living)
3. Child growth and development

<sup>2</sup> *Ibid.*, p. 63.

4. Specialized methods and materials (in health education and safety education)
5. School-community relationships (the services and contributions of various personnel and agencies interested in school health programs)

Physical education is education through physical activities. The objectives, course content, methods and materials of instruction, and the activities themselves differ considerably from health education. Sports, dancing, gymnastics, and swimming are some of these physical education activities. Physical education has a very definite place in the curriculum of the elementary and secondary schools. However, the terms, "health and physical education," have not promoted physical education or health education. Both subject-matter fields have suffered from the terminology, "health and physical education." Too often, to meet the demands of educators outside the fields of health education and physical education, time allotted to physical education has been relinquished to health education to enable health education to meet local and state requirements.

Regularly scheduled health education in secondary schools should be taught by school health educators or teachers of health education. In secondary schools having no school health educators, physical education teachers may be assigned health education, but school principals and superintendents should consider carefully whether the physical education teacher has the professional school health preparation, the fund of specific health information that is necessary for the 13 areas of health education, the aptitudes for classroom teaching, the interest and enthusiasm for health education, and the leadership aptitudes for developing the school health program.

Neither the physical education, biology, or home economics teacher, or any member of the health professions, who is assigned health education, can do a satisfactory job of teaching health education when she has less than the minimum preparation in health education. In most instances, the secondary school teacher assigned health education has inadequate or no preparation in school health education. At the National Professional Preparation Conference, it was emphasized that a teacher not fully prepared in health education, yet assigned health education, has the assignment on a *temporary* basis. Also, it was pointed out, the unqualified teacher assigned health education must build a foundation of knowledge and competency in health education on which further health education preparation can be built.<sup>2</sup>

Some of the functions of the physical education teacher in the total school health program include:

1. Health grade classification by physicians to indicate to some extent the type of physical education for each student

<sup>2</sup> *Ibid.*, p. 62.

2. Observation of signs indicating possible diseases, defects, or injuries among pupils
3. Exclusion of pupils with communicable diseases and readmission of pupils recovered from communicable diseases
4. Emergency care procedures
5. Adapted physical education for students classified by physicians as needing adapted physical education
6. Prevention of dental and eye injuries in physical education activities
7. Cooperation with physicians and parents in planning physical education activities
8. Promotion of sanitation and accident prevention procedures in the physical education facilities
9. Posture screening
10. Promotion of desirable pupil health and safety practices in all daily physical education activities
11. Cooperation with school nutrition activities in order to foster desirable pupil dietary practices
12. Health and safety practices that motivate students to establish the same practices
13. Recognition of fatigue among pupils and adjustment of daily physical education activities to pupil health needs

The physical education teacher does assist in the development of the pupil's physical and mental health. Thus the physical education teacher has a strategic position in the school health program.

## SCHOOL PHYSICIAN

Investigators have found that only a few large city school systems employ a full-time school physician. Several factors account for the few full-time physicians employed by board of education. First, very few physicians are attracted to the position of a full-time school physician. Second, local boards of education are not eager to employ a full-time physician when family physicians are giving medical care needed by a patient enrolled in the public schools. Third, the public schools, by regulations of state and local boards of education, are not established for the purpose of medical treatment. Fourth, the functions of school physician are limited to school health services. Some of these functions are to:

1. Participate in the planning of school health services
2. Give medical examinations to pupils who have no family physician and to athletes
3. Classify students for physical education activities
4. Work with school nurses, health coordinator, and school superintendent on exclusion and readmission procedures and emergency care procedures

5. Work with school nurses, health coordinator, and special education personnel on vision and hearing screening procedures
6. Assist in the special education activities
7. Work with school nurses, health coordinator, and school superintendent on health records and other types of records used in school health services
8. Administer tuberculin testing and immunization procedures
9. Develop screening of heart conditions and diseases
10. Encourage and conduct screening procedures of nutritional status and orthopedic cases
11. Work with school counselors and health coordinator to discover and assist the emotionally disturbed child
12. Be available to school personnel to help with their health problems
13. Work with teachers of health education and the health coordinator in strengthening the total school health program
14. Assist with the supervision of sanitary conditions in the school building

School physicians do not correct remediable defects and do not provide medical treatment except in an extreme emergency. The American Public Health Association has recommended special preparation for school physicians.<sup>4</sup>

## SCHOOL NURSE

The first school nurse was employed by the New York City schools in 1902. Since that time, local boards of education have tried to employ full-time school nurses. There is an insufficient number of full-time nurses, however, not only in small but in large city school systems.<sup>5</sup> In addition, many school nurses object to the lack of preparation available for the job of the school nurse, and to the complacency among some nursing educators to accept school nursing, under these circumstances, as an important specialization in nursing. The ideal preparation of the school nurse would combine school health education and public health nursing. Many official statements have been given concerning the functions of nurses employed by boards of education. The American Nurses' Association and the Committee on School Nursing of the American School Health Association, among other professional groups, have issued statements on the subject. One of the most important functions of the school nurse is the follow-through (Chapter 5). Other possible functions are to:

<sup>4</sup> American Public Health Association, Committee on Professional Education. "Educational Qualifications of School Physicians." *American Journal of Public Health*, 43:75-82 (January 1953).

<sup>5</sup> Elizabeth Neilson. "Analytical Study of School Health Service Practices in the United States." *Journal of School Health*, 30:353-360 (November 1960).

1. Assist the physician and dentist with examinations conducted in the school buildings
2. Participate in the in-service health services education of school personnel
3. Work with special education teachers on vision and hearing screening
4. Assist in the control of communicable diseases
5. Work with school and family physicians in developing efficient health services
6. Develop records for school nursing activities
7. Work with physicians, superintendent of schools, and health coordinator on exclusion and readmission procedures and on emergency care procedures
8. Work with school and family physicians on immunization procedures and tuberculin testing
9. Assist school counselors, health coordinator, and teachers in discovering the emotionally disturbed child
10. Work with the Parent-Teacher Association on the readiness-for-school-medical examination
11. Assist teachers of health education and health coordinator in developing the total school health program
12. Assist with the supervision of sanitary conditions in the school building

Boards of education not able to employ a school nurse or several nurses seek assistance from local or county health departments. Public health nurses have often worked with public school teachers in developing some of the activities of the school health services.

## FAMILY PHYSICIAN

Throughout the literature of school health education there has been a continuous reference to the family physician. The family physician is a medical doctor licensed to practice medicine in the state where he resides. It is important that school personnel do *not* accept persons practicing medicine without a license to do so. When the student has no family physician, the school nurse or the health coordinator can ask the local health department or school health committee of the local medical society to submit a panel of physicians. The panel should be brought to the parents' attention so that the parents can select a family physician. If the family cannot afford the services of a family physician, the services of the medical officer in the local or county health department might be utilized. The family should be aware that information concerning a pupil's health status may be limited when the pupil is unknown to the physician.



## DENTIST AND DENTAL HYGIENIST

In school systems of varying sizes it is a common practice for family dentists to visit the schools and to participate in the dental health activities. Previously (in Chapter 3), a summary of dental services, oral examinations, prophylaxes, referral for dental services, and topical fluoride applications in a study of 3266 schools was reported. In this study, one school in every three indicated that schools had the cooperation of one or more dentists. The dentist provides the leadership for dental services in schools depending on the availability of dentists within the community.<sup>6</sup> The dentist is a doctor of dental surgery licensed to practice dentistry in the state where he resides.

Throughout the literature on school health there has repeatedly been recognition of the services of the dental hygienist in elementary and secondary schools. There are few instances, however, where the dental hygienist is a member of the instructional staff of a school. In the study of 3266 schools, only 4 percent of the schools reported full-time dental hygienists, and 12 percent reported part-time hygienists. Even in the larger city school systems, a full-time dental hygienist is rarely employed. Schools reporting the use of dental hygienists indicated that topical fluoride applications were given by 46.9 percent of the hygienists, and prophylaxes were provided by 36.2 percent.<sup>7</sup>

There is need for extensive development of dental health services and education in elementary and secondary schools. Investigations by the American Dental Association, reported in 1955 and 1961, have shown that dental health services and education need to become more effective and reach more pupils. Dental societies and public school personnel should work together to solve dental problems found among children and youth.

## OTHER PERSONNEL IN HEALTH SERVICES

Some large city school systems have certain medical specialists on a part-time or consultative basis. These specialists include ophthalmologists, otologists, pediatricians, and psychiatrists. Occasionally, an orthopedic surgeon and cardiologist are listed as consultants to school health services.

School systems having special education may employ a registered physical therapist to work with pupils having orthopedic problems and cerebral palsy. Other personnel in special education may be speech and hearing therapists, audiometrists, and psychologists. Psychiatric social workers may be employed by some school systems.

<sup>6</sup> Melvin Dollar and Perry J. Sandell. "Dental Programs in Schools." *Journal of School Health*, 31:3-14 (January 1961).

<sup>7</sup> *Ibid.*

## LOCAL HEALTH DEPARTMENT

Public health nurses and the local medical officer can assist school personnel in developing *health services* in the elementary and secondary schools. In school systems not able to employ full-time school nurses, the public health nurses may assume some of the responsibilities of the school nurse, with the common consent of the board of education and board of health. These responsibilities may include the follow-through, control of communicable diseases by exclusion and readmission procedures, immunization, and tuberculin testing. The local medical officer may assume some of the responsibilities of the school physician, with common consent of the board of education and board of health. These responsibilities may include medical examinations of pupils having no family physician, formulation of health records, medical examination of athletes, establishment of exclusion and readmission procedures and of emergency care procedures, and care of the handicapped child.

Sanitary engineers, sanitarians, inspectors, public health nurses, and the local medical officer can work with school personnel in maintaining a *healthful and safe school environment*. Purified water, adequate disposal of sewage and garbage, inspection of food and milk, control of insects and rats, sanitation in the school lunchroom, and accident and fire prevention are some of the many measures taken by public health personnel to promote a healthful and safe school environment. Careful inspections, suggestions to eradicate diseases, and assistance in solving environmental health problems are given by public health personnel.

The public health educator can assist the school health educator by sharing information related to community health problems, arranging field trips to the health department, and scheduling public health personnel for available demonstrations in *health education* courses. The public health educator, local medical officer, public health nurses, or other public health personnel should select a representative of the local health department to serve as a member of the school health council.

## NONOFFICIAL HEALTH AGENCIES

In Chapter 10, there are suggestions for the school personnel's use of nonofficial health agencies. These agencies include professional groups, voluntary health agencies, civic and service community agencies, foundations, and commercial and semicommercial groups found within the local community. Too often, school personnel are not aware of the local medical and dental societies, units or chapters of national voluntary health agencies, and community welfare and civic groups. These non-official health agencies should be represented on school health councils by an elected member of the nonofficial health agencies.

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## FUNDS, FACILITIES, EQUIPMENT, AND SUPPLIES

Investigations by Kilander,<sup>1</sup> Neilson,<sup>2</sup> and Streit<sup>3</sup> have revealed sufficient evidence that school health services are paid by local boards of education. In addition, the National School Lunch Act of 1946 (Public Law 396) recommends that state education departments and local boards of education work together in the distribution of funds for noonday school meals. Local boards of education designate money from taxation not only for school health services but also for healthful school living and health education. These funds provide facilities, pay salaries of school personnel, and buy equipment and supplies.

### FUNDS

Allocation of funds for the total school health program is distributed among several divisions of the budget of the local board of education. It is possible that school health services may be a separate item on the budget. Also, school nutrition may be listed as "school lunch" or "food services" on the board of education budget. Salaries of teachers of health education and the supervisor of health education are usually listed under the item, "instruction." Supplies and equipment necessary for maintaining a sanitary school environment may be placed under the item, "maintenance."

Within *school health services* funds must be secured to pay the salaries of school nurses, transportation expenses of school nurses, and all equipment and supplies used in school health services. Part-time physicians, dentists, dental hygienists, or other health services personnel employed

<sup>1</sup> H. F. Kilander. *Health Services in City Schools*. Bulletin 1952, No. 20. Washington, D.C.: U.S. Government Printing Office, 1952, p. 11.

<sup>2</sup> Elizabeth Neilson. "Analytical Study of School Health Service Practices in the United States," *Journal of School Health*, 30:353-360 (November 1960).

<sup>3</sup> W. K. Streit. "Health Services in City School Systems." *Journal of School Health*, 26:111 (April 1956).

by the local board of education must be paid from funds allocated to school health services. In addition, funds must cover the construction, equipping, and maintenance of health service units within school buildings.

The efficient operation of school lunchrooms depends, in addition to cash sales, on funds allocated to *school nutrition*. These funds pay the salaries of the school lunch director and managers, cooks, helpers, attendants, cashiers, and other food workers. Utility bills must be paid. In addition, funds are needed to purchase equipment in the dining, kitchen, dishwashing, and storage areas. Food must be purchased for the noonday school meal. Supplies are needed to dispense the prepared food as well as to prepare the food.

In 1946, the United States Congress passed Public Law 396—the National School Lunch Act already mentioned. This law provides that surplus food, bought by the United States Department of Agriculture, and funds shall be distributed among the states to provide an adequate and well-balanced noonday meal to pupils in elementary and secondary schools. Each state department of education is the central agency aiding local boards of education. If the local board of education agrees to accept the surplus food and funds, it must guarantee the type A<sup>4</sup> or its equivalent school noonday meal, at cost. The local board of education must assume the cost of operating the lunchroom, provide facilities and equipment, pay salaries of workers, and maintain the lunchroom within sanitation regulations of the local health department. Expenditures for facilities, equipment, supplies, and labor paid by local boards of education may count toward the matching of federal funds. The cost of the noonday school meal is to be kept at a minimum.<sup>5</sup> Most state departments of education have a School Lunch Division which works with local boards of education and lunchroom directors and managers. Thus, if the local board of education agrees to accept surplus food and funds from the federal government, it still has to provide facilities, equipment, supplies, labor, and utilities and to purchase additional food.

Salaries of the supervisor of health education or health coordinator, the teacher of health education, and the elementary school classroom teacher are paid from funds allocated to "instruction" in the board of education budget. In addition, *health education* requires funds for instructional supplies. Some of these supplies are textbooks, supplemental reference materials, audiovisual aids, filing cabinets and demonstration table, materials for teaching first aid, and items needed for experiments and demonstrations. Funds are needed to purchase standardized health education tests, library materials, exhibits, and pupil records. There should be

<sup>4</sup> Chapter 9.

<sup>5</sup> U.S. Department of Agriculture, "National School Lunch Act—Public Law 396, 79th Congress." Washington, D.C.: Government Printing Office, June 1946.

some money available to assist the teacher of health education in the preparation of classroom materials.

The multiplicity of custodial supplies and maintenance equipment needed to maintain a sanitary *school environment* should be of utmost importance on the board of education budget. A sanitary school environment reduces the possible incidence of diseases whether in the toilet rooms, classrooms, lunchroom, or physical education facilities. Under the budget's item of "maintenance," salaries of custodians and maids should be placed. Many secondary schools have a laundry which provides clean towels for physical education activities, home economics classes, health service unit, and lunchroom. Each time a student has a physical education class or participates in after-school physical education activities, he receives a clean towel. Some secondary schools use the laundry to provide clean gym clothing or athletic uniforms. However, though a sanitary school environment is the main responsibility of the custodial staff, it is not their responsibility alone; teachers and pupils also have specific daily responsibilities in maintaining sanitary surroundings.

## FACILITIES

Three types of facilities in the school health program will be considered: the health service unit, food-service areas, and the health education classroom. School facilities used in health services are called the "health service unit," "health room," or "health suite." For simplification, the term "health service unit" will be used.

The size of the *health service unit* will depend on the enrollment in the school building the unit serves, services rendered within the unit, and ages of the pupils using the unit. Some of the services may include emergency care of the ill or injured pupil, medical examinations, dental examinations, screening procedures for vision and hearing, tuberculin testing, nutrition and posture screening, exclusion and readmission procedures, and health counseling. In addition, the unit may be used by the school health educator for demonstrations during health teaching. Community health agencies may schedule well-child conferences, preschool health activities, and adult education meetings in the health service unit. School disaster procedures will designate the health service unit as the central first-aid station.

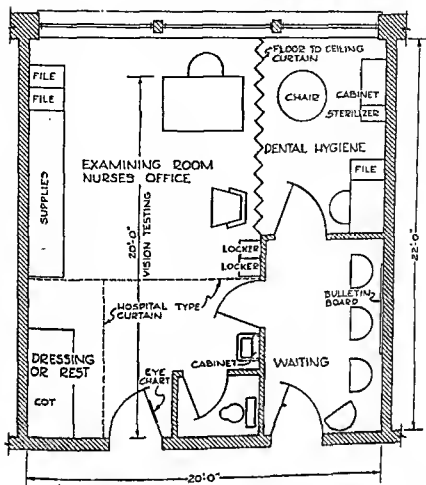


Figure 14. Suggested Health Suite for Up to 300 Pupils

Redrawn, by permission, from an illustration provided by the Division of School Buildings and Grounds, State Education Department, The University of the State of New York.

and light in color. Wall construction used to divide the health service unit into separate rooms needs careful consideration.

The Committee on School Health Service Facilities of the American School Health Association<sup>6</sup> recommends from 470 to 500 square feet for the elementary school health service unit and 560 to 870 square feet for the secondary school health service unit. Some of the specific activities housed in the health service unit are conferences between health services personnel and teachers, children, and parents; inspection of scalp

<sup>6</sup>"Report of the Committee on School Health Services Facilities of the American School Health Association," *Journal of School Health*, 29:95-114 (March 1959).

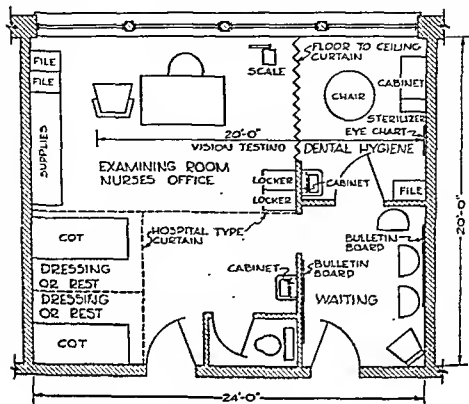


Figure 15. Suggested Health Suite for 300 to 800 Pupils

Redrawn, by permission, from an illustration provided by the Division of School Buildings and Grounds, State Education Department, The University of the State of New York.

and skin; weighing and measuring; immunization; maintenance of records; first aid; vision screening; and care of the ill and injured child.

The National Facilities Conference<sup>1</sup> recommends that the health service unit be divided into (1) waiting room; (2) evaluating room; (3) resting rooms; (4) toilet rooms; (5) counseling room; (6) dental evaluating room; (7) isolation room; and (8) office area. Combinations of these spaces may be planned depending on services rendered.

Schools having enrollments of 300 or more pupils or ten classrooms should have a waiting room. It should be separated from other rooms of the unit by a wall to the ceiling and should be accessible to a corridor and evaluating room.

When a school has 180 or more pupils and six classrooms, it should have an evaluating room in the health service unit. This room should also serve for vision screening and therefore should have an uninterrupted distance of 20 feet. It should be connected with rest rooms, waiting room,

<sup>1</sup> National Facilities Conference, *Planning Facilities for Health, Physical Education, and Recreation* (rev. ed.). Chicago: Athletic Institute, 1936, p. 75.



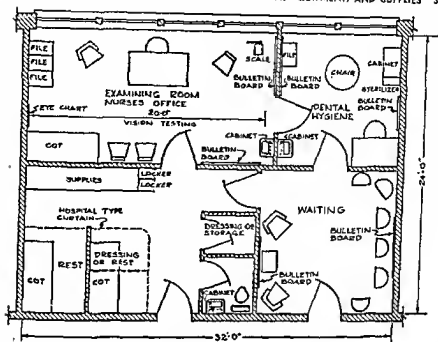


Figure 16. Suggested Health Suite for More Than 800 Pupils

Redrawn, by permission, from an illustration provided by the Division of School Buildings and Grounds, State Education Department, The University of the State of New York.

and offices. In small schools, the evaluating room may be a rest room. The types of activities that take place in the evaluating room will determine the size of the room.

All schools should have separate rest rooms for each sex within the health service unit. High schools having an enrollment of 300 or more students need separate rest rooms. In schools not having full-time health service personnel, the rest rooms should be located near the principal's office or the health classroom. Rest rooms may be used by pupils needing rest during the school day, pupils injured and receiving emergency care, and pupils with illnesses other than communicable diseases.

Toilet rooms should be accessible to rest rooms. In schools with 300 or more pupils, toilet rooms with a water closet and washbasin should be provided for each sex. These toilet rooms should be well ventilated. Washbasins might be operated by waist, knee, or foot.

Opening off each rest room should be storage space with linens, pillows, blankets, and other supplies. Movable storage cabinets are preferred.

In addition to rest rooms, there should be a small isolation room, for pupils with communicable diseases. The room should be connected with the evaluating room.

When the dental services of the school are performed in the health service unit, the evaluating room is extended so that a floor area approximately 100 square feet is provided for these services.

Office space, within the health service unit, will depend on the amount of time health service personnel spend within a school. When provided, this facility should be connected with evaluating room and waiting room. The office space may be used as a counseling room where the physician, nurse, teacher, and parent can discuss the child's health.<sup>a</sup>

The *food service* areas should be above ground, have an accessible loading area, be located away from playing fields and student traffic, and be isolated from classrooms. There are seven areas to be considered. The receiving area should have a loading platform so that food can be taken into the inside receiving space. The storage area should be close to the receiving area and kitchen. The serving area consists of the kitchen and the area dispensing food. Milk service and hot and cold food sections are in the serving area. A lavatory with hot and cold running water and mixer faucets, soap, and individual towels must be had in the serving area. The dining area is where the students eat. Some schools convey the noonday meals from the kitchen to the classroom on portable food carts. Other schools prepare "bag" lunches which are delivered to the classroom. In these schools, a dining area is not necessary. The dishwashing area is best located near an exit and should be out of the way of cross traffic. The soiled dish area must have sufficient length to provide space for scraping dishes and to hold dish racks. The clean-dish area must allow for the air drying of dishes.

The *health education classroom* in the secondary school is designed for the type of instruction that takes place in the classroom. It has adjustable and movable desk-chair furniture for no more than 35 pupils. Opaque shades are found at windows so that films and other projected materials can be viewed in a darkened room. The classroom has work tables, demonstration table for the teacher, filing cabinets, poster cabinet, vertical file, open-shelved bookcases, storage cabinets, and a sink. The room is acoustically treated and air conditioned. Bulletin boards are found on the inner corridor wall. Chalkboards are placed on the front wall. There are ample electrical outlets on each wall. Sufficient storage space should be provided for bandages, splints, folding hospital stretcher, life-size manikin, microscopes, experimental equipment, and teacher-pupil-made materials. A locked filing cabinet is necessary to store teacher-made and standardized tests, insulin and teacher-made samples of narcotics, course and unit outlines, and evaluative criteria. A teacher's desk and chair should be considered within the health education classroom.

<sup>a</sup> *Ibid.*, pp. 75-78.

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## SCHOOL HEALTH COUNCIL

A functional and effective school health program is dependent on community understanding and support. The school health council, with its participating members drawn from school personnel and students, parents, community physicians and dentists, representatives of local health agencies, and public health personnel, can interpret the broad scope of the school health program to the community. Before attempting to explain the council, it is necessary to differentiate between the school health committee and school health council. The committee may be one of many committees of the council. Different projects are assigned to separate committees. The school health council may be found within a school building, system, or several school systems.

## PURPOSE OF THE COUNCIL

School health educators and coordinators are often asked why health councils are important. The council *assists in solving* school health problems. These problems concern both pupils and school personnel, and many of the solutions will affect community life. The council has limitations: it has no legal administrative basis for its actions, and its members cannot assume responsibilities delegated to the school superintendent in the development of the school health program. The school health council is a definite part of the American public school traditions and functions. It operates within a local school or school system and is not under the dictation of any state or federal agency.

## OPERATING PROCEDURES

The school health council follows these procedures:

1. Discovers pertinent school health problems having direct relation to community health
2. Compiles all data concerning the school conditions that create these health problems

3. Plans a course of action to solve the pertinent problems and improve the health of all school personnel and students
4. Suggests to the school superintendent the course of action or, with the superintendent's approval, carries out the course of action
5. Evaluates and revises plans of action so that other problems, appearing in the future, can be easily handled
6. Makes recommendations for long-term planning that include both school and community health

In order to discover the pertinent school health problems, the council members can use the survey method. The student members might employ self-rating scales or questionnaires. The school faculty and community personnel might utilize check lists, conferences, anecdotal records, and interviews. The school health problems that appear with the greatest frequency become the problems the council attempts to solve. It may be necessary for the chairman of the council to designate committees to gather data on school conditions that create these problems. Various parts of the facilities, school activities, curricular patterns, and school personnel provide the data. Often the chairman of the council may appoint a committee to appraise the effects of existing conditions on community health. When data on the conditions are compiled, the results of the compilation will focus attention on the most outstanding health problem. The members of the council pool their knowledge, interests, and efforts in planning a course of action to solve the pertinent problem. After several plans of action have been plotted, the members decide the course of action not only the most expedient and effective but also the most likely to gain school and community support.

The chosen course of action must have the superintendent's approval. It may be assigned to a particular committee of the council or may need the concentrated efforts of all members. However, the course of action, once put into effect, needs continuous evaluation and revision because many school personnel, students, and school facilities will be involved. With each course of action, the council should make recommendations for long-term planning so that existing problems that have been solved will not reappear. Such long-term planning will necessitate a broad probing into the entire school health program.

## MEMBERSHIP

The members of a school health council found in a *school building* are the principal, the school health educator/coordinator, a physician and a dentist interested in the school's health problems, a school nurse, three teachers, students representing various grade levels, the school counselor, the school lunch manager, custodian, a representative from the Parent-

Teacher Association, two members of community voluntary health agencies, and a member of the local health department.

If the school health council is to be a representative body from several school buildings within a *school system*, the members include:

1. An administrative official of the school system
2. A school health educator who may be the health coordinator or supervisor of health education
3. A physician and a dentist interested in the school system's health problems or the physician and dentist cooperating in school health services
4. A supervisor of school nurses or a representative of the school nurses
5. Teachers elected from different school buildings
6. Students chosen from various school buildings and age levels
7. A counselor
8. A lunchroom director
9. Chief of the school system's custodial services
10. Two representatives of the Parent-Teacher Association who may be the chairman of the health committee of the local association
11. Two members of different community voluntary health agencies
12. Two personnel from the local health department

## ACTIONS

In order to function successfully, the school health council should have the school health educator or coordinator as leader because he has had experience with the functioning of a health council. As a part of his undergraduate school health field work, the school health educator shared the problems of school and community health with numerous community co-workers. These co-workers might have been a public health nurse, a community sanitary engineer, an executive secretary of the local tuberculosis association, or the director of a community welfare agency. Having been a member of a school health council and having prepared for school health education, the school health educator or coordinator is the person best qualified to assume leadership in the council.

To function successfully, the council should:

1. Rotate the chairmanship at the close of a school semester
2. Have an agenda of meetings with a steering committee
3. Solve a problem in the course of action that can be completed within a school semester
4. Have documentary evidence of all committees' work
5. Encourage equal participation of all members
6. Have faith that the problem to be solved will be solved
7. Have continuous and reliable publicity, stressing the work of the council's members
8. Furnish an annual report easily understood by all school patrons

As the leader of the council, the school health educator or coordinator, does not accept its chairmanship. He obtains permission from the administrator for the survey methods employed by the council members in compiling data on pertinent school health problems. He informs the administrator and acquires the administrator's approval of the council's actions, revisions in plans of action, evaluation of actions, and long-term planning. He works with the steering committee in planning the agenda of meetings. He guides the council's attempts to solve pertinent school health problems and stimulates the members to contribute unselfishly of their time, efforts, and knowledge. The educator or coordinator interprets policies and procedures of the school health program to council members. He is aware of community and school personnel who are interested in the school health program and who might replace other council members who become ill, move from town, or are too frequently absent from meetings. He serves as a liaison agent between the public school and the community personnel on the council. He publicizes the work of the council members through many media, strives to have continuous and reliable publicity, and assists in the publication of an annual report of the council's actions. He has available information for solving school health problems. He seeks new ways for evaluating the effectiveness of the school health council.

### ACTIONS IN SCHOOL HEALTH SERVICES

School health councils can assist the development of the total school health program in many ways. In *health services*, the council can be the means by which family physicians and dentists acquaint school personnel with the incidence of remediable health difficulties among students. The number of dental health problems, inadequacy of immunization procedures, incidence of disease and accidents, types of irremediable health conditions, and emotional health problems among pupils can be disclosed. The incidence of emergency cases for illness or injury will be reported.

The representatives of community voluntary health agencies and public health personnel can inform the council members of interagency cooperation in the care of a student with a communicable disease or mental illness. These representatives can report the incidence of community health problems and can reveal public indifference to particular community health problems. Problems facing the public health nurse at home visits will be disclosed. Interagency cooperation in providing medical and dental care to indigent pupils can become known.

Many of the school health problems pertaining to school health services may be solved through exchange of ideas by the professional health services personnel, public health workers, and the public school personnel at council meetings. A pertinent problem in school health services is the provision of adequate routine medical examinations by family physicians

so that data on the health status of each student can be gathered and used for classification in physical education. Reduction of medical excuses prohibiting students from participating in physical education is another problem. Adequate school-community dental health programs also present a challenge. A panel of physicians to take care of emergency cases of illness or injury is another problem. Parent education in the importance of immunization must be considered. Better exchange of pupil information between family physicians and school personnel may be needed. The provision of adequate vision and hearing screening to all students is another problem. There is need for parent education so that the excluded ill child is kept at home rather than allowed to play in the neighborhood. Parent education in the care of the child's deciduous and permanent teeth is often inadequate.

### ACTIONS IN HEALTHFUL SCHOOL LIVING

Pertinent school health problems reflecting conditions of the school *environment* can be corrected by suggestions from the school health council. Some of these conditions are an unsafe playing area that serves as a collection spot for tin cans and bottles, provides no parking areas for bicycles, has unsupervised activities of playground apparatus, and has no designated areas for young children.

A playground safety patrol might be organized by the school health council to establish rules and regulations for the use of each piece of playground apparatus by children and to designate play areas for children of different ages. The patrol might provide areas for parking bicycles or install bicycle racks. It could remove stones, bottles, and tin cans, and check on installations of playground apparatus. It might provide supervision by patrol members for each play period and conduct a safety court for violators of playground rules.

Improvement of sanitary procedures in the environment might be a project of the council. Plans to improve existing conditions, such as the untidy appearance of toilet rooms, soiled dishes remaining on cafeteria tables, scraps of paper dropped in corridors and on auditorium floors, and disorderly corridor lockers, might be suggested. An inspection of the lunchroom sanitation might be the means of reducing the incidence of colds, streptococcal infections, and food-borne diseases common to the school population. This inspection might result in the hiring of additional workers, improved garbage- or waste-disposal methods, better sanitizing of dishes and glassware, and pupil assistance in removing soiled dishes from tables.

A check list made by the members of the school health council, of accident and fire hazards, might indicate the need for safety procedures in the environment. A survey of the school building's lighting and furniture might be completed. The school health council might be the organization



through which fire and disaster procedures for the school building are planned and the agency to stimulate frequent school fire and disaster drills, instigate community-wide action on disaster planning, and conduct fire-prevention campaigns. The members of the council may discover hazards causing fires.

The health council can stimulate student interest in its responsibilities for school *nutrition*. The lunch manager is a member of the council; she can therefore make many suggestions that will promote school nutrition. Because the council's membership is drawn from the community professional health services personnel, it is an excellent medium through which to discuss school and community nutritional problems, propose plans to solve them, and take action to eradicate them. A continuous program of in-service nutrition education might be suggested. Another possibility is a program of "A Good Breakfast" sponsored by the health council.

The health council can be active in promoting the physical and mental health of the school *personnel* by advocating that personnel have annual medical examinations, adequate sick leave, and group voluntary health insurance, and by being aware of the school environmental factors that can cause injury to personnel.

## ACTIONS IN HEALTH EDUCATION

Finally, the school health council is a source of objective data used in discovering pupil health needs and interests as a basis for *health education*. For example, the council may have conducted a survey of accidents occurring to secondary school students and the forms of self-medication applied to injuries. The results of the survey would be objective data for the teacher of health education to use in safety education and American Red Cross First Aid. A survey might be conducted to learn students' dietary likes and dislikes in order to pin-point the need for nutrition education in health education classes. Another possibility would be the statistical evidence of common health problems reported by professional health services and public health personnel. The dentist, who is a member of the school health council, has considerable data on the dental health problems of school-age children. A check list, used by the student representatives of the council, can indicate health misconceptions of school personnel and students. The council's actions in improving the school environmental conditions, promoting school nutrition, and establishing more meaningful school health services reveal information pointing to health education.

The school health council is an invaluable ally to the school health educator because it accumulates data that are pertinent to health education. The school health educator realizes that the council members are continuously gathering information revealing community and school problems. The council members will be aware of the necessity for direct health instruction in the elementary and secondary schools. Council members

will ask "What is being done about this problem in teaching?" In all probability, the council members will support regularly scheduled health education classes in the secondary schools and increased emphasis on health education in the elementary schools.

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## EVALUATION OF THE SCHOOL HEALTH PROGRAM

Evaluation can reveal progress, existing conditions, needed improvements, and future developments of the school health program. Evaluation can include school health services, healthful school living, health education, and the total health program. It can be done on a day-to-day basis or at any time during a school day. School health services can be evaluated separately from health education. Or these two parts of the health program can be evaluated at the same time. Many types of evaluative criteria can be used, including check lists, observations, questionnaires, surveys, records, tests, and reports. Objectivity, validity, and reliability should be stressed. Personal bias and self-interest are eliminated when objectivity is present. Validity is the extent to which an evaluative criterion measures what it intends to measure. The consistency of measurement is reliability. Who participates in the evaluation of the school health program? Pupils, parents, school personnel, community co-workers in health, and local citizens. The main purpose of evaluation is to determine the effects of the health program on the pupil's physical and mental health status, and on the pupil's health practices, attitudes, interests, and knowledge.

### SCHOOL HEALTH SERVICES

Every division of school health services can be or has been evaluated by research techniques. These divisions are (1) appraisal of the pupil's health status; (2) dental health; (3) nonremediable health conditions; (4) prevention and control of diseases; (5) emergency care; and (6) follow-through activities.

### APPRAISAL OF THE PUPIL'S HEALTH STATUS

Many types of evaluative criteria can be used to determine the pupil's health status. The teacher and nurse's *observations* can indicate possible pupil health problems. To improve the validity of observations, the teacher

and nurse should be aware of the following suggestions. First, the types of pupil health problems must be accepted (Chapters 2, 3, 4, 6, 7, 9). Second, some pertinent signs of each particular health problem must be known (Chapters 2, 3, 4, 6, 7). Third, skill and accuracy must be developed in recognizing the pertinent signs of each particular health problem. Fourth, observations must be recorded continuously throughout the school day. Fifth, records should be developed of the pertinent signs of each pupil health problem.

Readiness-for-school, routine, referral, and special *medical examinations* by family or school physicians can be forms of evaluation. The results of these examinations can indicate a student needing medical care, classify a student for physical education, identify a student for special education and adapted physical education, and disclose a student whose school work needs modification. Medical examinations can be among the most effective techniques of appraisal of a pupil's health status.

Many *screening procedures*, used in the appraisal of the pupil's health status, were given in Chapter 2. These procedures can be evaluative criteria. Screening procedures can indicate, to some extent, the pupil's visual and hearing difficulties, heart diseases, posture conditions, nutritional deficiencies, and speech problems. Wallace<sup>1</sup> has indicated that research is needed to determine the frequency, accuracy, and value of screening procedures in school health services.

The *tuberculin tests* are evaluative criteria indicating whether the person tested has or does not have tubercle bacilli within his body. Regarded by physicians as specific and reliable, these tests reveal hidden tuberculosis cases, status of tuberculosis-control efforts, and information for medical diagnosis.

## DENTAL HEALTH

Evaluation of dental services in elementary and secondary schools was reported in Chapter 3. The dentist's oral examination and full-mouth x-ray can indicate many types of pupil dental health problems. The dental inspection can reveal group dental needs and regular dental care by a family dentist. Consistently, evaluative criteria applied to school dental health services disclose a high incidence of dental caries, periodontal diseases, and malocclusion among elementary and secondary school students.

## NONREMEDIAL HEALTH CONDITIONS

Evaluative criteria can be applied to many types of pupil nonremediable health conditions. School personnel should be aware of the incidence, severity, medical care, and educability of the pupil with diabetes, epilepsy, cerebral palsy, glaucoma, cardiac conditions, defective vision, severe pos-

<sup>1</sup> Helen Wallace. "Evaluation of School Health Services." *Journal of School Health*, 33:171 (April 1963).

ture conditions, defective hearing, and muscular dystrophy. Rarely do evaluative criteria in school health services include the nonremediable health conditions.

## PREVENTION AND CONTROL OF DISEASES

School personnel and parents should be informed about the immunization levels of specific diseases prevalent among elementary and secondary school pupils. Some of this information is obtained from the pupil's health history found on the health record. Immunization procedures given to a pupil can indicate preventive measures to combat diseases. The American Medical Association reports that less than half the states have state-wide regulations requiring immunization before entrance into school.<sup>2</sup>

The incidence of diseases should be compiled so that school personnel can be familiar with the types of diseases among elementary and secondary school pupils. "Nuisance" diseases, such as head lice, are just as important as the varieties of the common cold. Too often, teachers are unaware of the repeated incidence of particular diseases, such as streptococcal infections.

## EMERGENCY CARE PROCEDURES

Compilation of accidents and illnesses reported on emergency care records can disclose accidents and illnesses occurring to a pupil or to many pupils. The emergency care records can be evaluative criteria for all procedures taken when a pupil is injured or ill. These records can be used when school and community personnel claim that negligence occurred during the care of the injured or ill child. These records can be used to identify accident hazards in the school environment, unsafe classroom equipment and activities, and needed safety education to prevent future injuries.

## FOLLOW-THROUGH

Poe and Irwin<sup>3</sup> have identified the specific tasks and responsibilities of school nurses by the job-analysis technique. Some of the findings of this study: (1) nurses employed by boards of education provide the greatest number of services; (2) follow-through activities by nurses are the most frequently reported nurse activities; and (3) more school nurses are needed. The investigation by Klein<sup>4</sup> showed the need for a detailed study of nursing functions in school health services, as related to this investigation. Evaluative criteria should be utilized to determine the amount of time to

<sup>2</sup> Robert Henderson, "The Second Deadliest Poison," *Today's Health*, 41:56 (October 1963).

<sup>3</sup> Nancy Poe and Leslie Irwin, "Functions of a School Nurse," *Research Quarterly*, 30:452 (December 1959).

<sup>4</sup> Ruth Klein, "Functions of the Public School Nurse and Professional Preparation for School Nursing," *Journal of School Health*, 29:270 (September 1959).

be spent by the school nurse in the follow-through activities. Wallace<sup>5</sup> has suggested that evaluative studies of personnel and funds in school health services can reveal the most efficient and effective use of personnel and funds.

## EVALUATIVE CRITERIA IN SCHOOL HEALTH SERVICES

Price<sup>6</sup> has completed a selective review of evaluative studies in school health services. These studies are divided into five sections. Section I reports how statistical rates as criteria were applied to information such as data on school illness. Section II discloses survey findings of various school health activities such as nursing services. Section III reveals how expert judgment was used to evaluate state and city school health services. Section IV shows that re-examination of children can be a useful evaluative method. Section V indicates the types of controlled experimentation in school health services.

Other evaluative criteria are:

American Public Health Association. "Suggested Standards for Health Services in Secondary Schools." *American Journal of Public Health Yearbook*, vol. 42, May 1952.

American School Health Association. "Appraisal Form for Evaluating School Health Services." *Journal of School Health*, 18:1-12 (January 1948).

Committee on School Health Councils, New York State Council on Health Teaching. Bulletin 3—*School Health Services*, 1432 Northern Boulevard, Roslyn, N.Y., n.d.

Joint Committee on Evaluation of School Health Programs. "School Health Services Survey Form." Columbus: The Ohio State University, 1955.

Kilander, H. F. "A Check List for the Emergency Care Program in Schools." *School Health Education*. New York: The Macmillan Company, 1962, p. 485.

Mississippi State Board of Health and Department of Education. *Evaluation of Health Services in the School Health Program*. Jackson: State Board of Health, 1952.

Neilson, Elizabeth A., and Leslie Irwin. "Analytical Study of School Health Service Practices in the United States." *Research Quarterly*, 29:417 (December 1958).

Sellery, C. Morley, and Blanche G. Bobbitt. "Evaluation of Health Education and Health Services in the Los Angeles City Schools." Parts I and II. *Journal of School Health*, 30:81 and 113 (February and March 1960).

Young, Marjorie. "The Brookline School Health Study." *Journal of School Health*, 31:47 (February 1961).

The evaluation of school health services can indicate the incidence and medical care of known pupil diseases, emotional disturbances, nonremedi-

<sup>5</sup> Wallace, *loc. cit.*, p. 175.

<sup>6</sup> Bronson Price. *School Health Services—A Selective Review of Evaluative Studies*. Washington, D.C.: U.S. Government Printing Office (Children's Bureau Publication No. 362), 1957.

able health conditions, injuries, operations, immunizations, visual and hearing difficulties, nutritional deficiencies, and posture conditions, to name a few. The evaluation can reveal the many types of pupil dental health problems and the extent of treatment of these problems. The evaluation of the follow-through services by the school or public health nurse can show parental cooperation or neglect, teacher-nurse teamwork, and local physicians' efforts to reduce diseases among pupils. The effectiveness of teacher-nurse conferences, pupil referral cases to medical and dental specialists, and home visits by nurses might be included in the evaluation of school health services. The modifications in the school day made by the teacher for the pupil with a specific health problem might be evaluated through school health services. These are some of the findings that could result from evaluation of school health services.

## HEALTHFUL SCHOOL LIVING

The five phases of healthful school living can be evaluated. To environmental factors, school nutrition, community resources, health of the school personnel, and the school day can be applied many evaluative criteria. Personnel of the local health department, family physicians, and directors of nonofficial health agencies can assist in the evaluation of healthful school living.

## ENVIRONMENTAL FACTORS

A check list may be used by personnel of the local health department in evaluation of the *water supply*. Some of the factors considered are the sources of the water supply, chemical and physical components of water, bacteriological quality, quantity of water required, location and characteristics of plumbing fixtures, and drinking fountains.

Adequate *sewage disposal* can be checked after evaluation of the water supply. Adequate sewage disposal will not pollute drinking water supplies, will not pollute water for bathing and recreational activities, will not create odor or unsightly appearance, and will not be a breeding place for flies. With inadequacy of sewage treatment in most communities, sewage disposal in schools must be carefully inspected.

When *garbage and waste* are improperly disposed, they become the breeding place for flies and other insects, harbor rats, and encourage stray animals. Thus personnel of the local health department will check to see if garbage and waste are disposed as they should be. In this inspection, public health personnel will be sure that garbage cans have tight-fitting covers and are cleaned and disinfected daily. Also, public health personnel will inspect all methods of incineration.

*Heating and ventilation* can be evaluated by thermometers, thermostats, and other heating and ventilation measuring devices. Fresh outdoor air

and rate of air exchange can be measured. Types of heating and ventilating systems, humidifiers, the placement of heating and ventilating units, variations of heating and ventilation caused by the nature of the school activities and by differences in age, and construction of the building need to be considered in the evaluation.

*Light and color* might be evaluated by suggestions from the Illuminating Engineering Society, National Society for the Prevention of Blindness, and state departments of health. Both the quality of lighting and the adequate level of illumination must be considered. Contrast, brightness, glare, reflection, and foot-candles need to be understood by teachers as well as by persons evaluating light and color. Promotion of the individual pupil's eye health needs serious consideration.

Guides for the classroom teacher when checking the pupil's posture in relation to *school furniture* have been given in Chapter 8. These simple procedures can prevent many of the common faults in sitting posture. Some of these faults are that the chair is too small, chair seat is too deep from front to back, chair seat is too high, desk top is too low and flat, and desk top is too high and far away from the pupil.

## SCHOOL NUTRITION

Many forms of evaluative criteria have been developed for school nutrition. Check lists have been developed to evaluate the quality of the school noonday meal, to measure the quantity of food served, to compare the meal served with the standards developed by school lunch divisions of state education departments, and to obtain food likes and dislikes of pupils served. Surveys and questionnaires have been used to determine the efficiency and sanitation of food preparation and serving, of facilities in the kitchen and dining areas, and of procedures of lunchroom workers. Local and state health departments can develop evaluative criteria to determine sanitary measures of all school lunch activities. In addition, dietary studies can reveal some of the reasons for nutritional deficiencies among elementary and secondary school pupils.

## COMMUNITY RESOURCES

Very few evaluative criteria used by school personnel have been developed about the services rendered by community co-workers to the school health program. Before any evaluative criteria can be developed, there are some questions that need to be asked. Are school personnel familiar with the reliable official and nonofficial health agencies and their services to the school health program? Do teachers use posters, bulletins, pamphlets, graphs, and other printed materials from these agencies? For what purposes do teachers use these printed materials? Do teachers use the official and nonofficial health agencies as locations for field trips? Are speakers from these agencies used in the intermediate elementary school



and secondary school for certain health education topics? Are teachers aware that personnel from official and nonofficial health agencies can assist in demonstrations, curriculum planning, and research studies? Are principals aware that personnel of these official and nonofficial health agencies have provided the leadership for school health councils in those communities not having school health educators?

## HEALTH OF SCHOOL PERSONNEL

Like community resources, few evaluative criteria have been developed to show the effect of the total school health program on the physical and mental health of school personnel. In school systems requiring school personnel to have an annual medical examination, a compilation can be had of all school personnel's health problems. This compilation can be used to designate diseases, nonremediable health conditions, and injuries among school personnel. Pre-employment health appraisals required of teachers, clerical staffs, lunchroom workers, custodians, and other school personnel can indicate specific health problems. Evaluative criteria such as questionnaires might be used to discover emotional health disturbances, welfare practices, and on-the-job complaints of school personnel.

## SCHOOL DAY

Evaluative criteria of the elementary and secondary schools contain many of the items of the school day and its relation to the pupil's total health. Some of these items are the school's philosophy, daily program, supervisory techniques, pupil grading, pupil promotional policies, teacher-pupil relations, and teacher's organization of the school day. These evaluative criteria are used extensively in the evaluation of an entire school system.

## EVALUATIVE CRITERIA IN HEALTHFUL SCHOOL LIVING

Some of the evaluative criteria available for healthful school living are:

California State Department of Education. *Checklist for a Healthful and Safe School Environment*. Sacramento: The Department, 1957.

Committee on School Health Councils, New York State Council on Health Teaching. *Bulletin 2—Healthful School Environment*. 1432 Northern Boulevard, Roslyn, N.Y., n.d.

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Hase, Gerald. "Nature and Frequency of Accidents among Elementary School Children in New York State." *Journal of School Health*, 28:343 (December 1958).

Hixson, L. B. "Checklist for a Safer School." *American School Board Journal*, 124:43 (April 1952).

Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. "Appraising Healthful School Living." *Healthful School Living*. Washington, D.C.: National Education Association, 1957, p. 299.

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National Commission on Safety Education. *Checklist of Safety and Safety Education in Your School*. Washington, D.C.: National Education Association, 1953.

Public Health Committee of the Paper Cup and Container Institute. *Survey on School Lunch Operation—Parts I and II*. New York: The Institute, n.d.

University of the State of New York. *Inspection and Supervision of the Health Aspects of the School Plant*. Albany: State Education Department, 1948.

## HEALTH EDUCATION

What is evaluated in health education? The pupil's mental and physical health status and his health knowledge, attitudes, practices, and interests are evaluated. In a class of 30 pupils, can the teacher evaluate all these factors? Yes, when the teacher is aware of the co-workers in the school and community who assist in this evaluation. Yes, when the teacher is alert to changes in behavior, beliefs, interests, and appearance of pupils. Yes, when the teacher records the effects of the instruction on the pupil. Can this evaluation be done on the secondary level? Yes, when regularly scheduled health education classes are held so that the teacher has opportunity to do worth-while evaluation, and when the content of these classes is based on the pupils' health needs and interests.

What is used in evaluation of the pupil's mental and physical health status, and the pupil's health attitudes, practices, interests, and knowledge? In order to answer this question, it is necessary to retrace the steps used to determine the health education content. In Chapter 14, sources to discover pupil health needs and interests are given. This discovery of pupil health needs and interests revealed a compilation of positive and negative findings for each pupil's mental and physical health status and his health knowledge, practices, attitudes, and interests. Those negative findings appearing with the greatest frequency pointed to the content of health education. Thus, an evaluation of health education will indicate whether the chosen content of health education did or did not change the pupil's mental and physical health status, and the pupil's health knowledge, attitudes, practices, and interests. When change was apparent, was the mental and physical health status of the pupil improved? Did this change foster desirable health attitudes, practices, and interests? How did this change affect the pupil's fund of health information?

A teacher observes visual difficulties among pupils and recommends visual screening. Pupils ask questions about vision. Because of these observations, the teacher encourages parents to take pupils to their family

physicians. The teacher includes Care of the Eyes and the Prevention of Eye Defects and Injuries in health education. What changes might occur in these pupils? In the evaluation of health education, did the teaching influence these pupils so that they repeatedly asked parents to take them to their family physicians? Did the teaching reach parents through pupils' home conversations so that parents sought medical advice? Did the students' choice of proper lighting for reading change? Were the students better informed about their eyes, care of their eyes, and medical specialists caring for the eyes? Did the students try to compensate for their visual difficulties? Did the students' attitudes toward the importance of vision change? To what extent were the students interested in their own visual difficulties? Were there noticeable changes in the students' visual acuities after their visits to family physicians? What false beliefs and superstitions about the eyes were evaluated by the students? These are some of the questions indicating the results of the health education.

In all likelihood, pupils have many negative findings about their physical and mental health status, and their health knowledge, practices, interests, and attitudes. What can be used to evaluate the effects of health education on these negative findings?

#### SOME SOURCES OF PUPIL INFORMATION USED TO EVALUATE HEALTH EDUCATION

##### Pupil Mental and Physical Health Status

1. Continuous and systematic teacher observation of pupil changes in appearance and behavior: visual difficulties, hearing difficulties, emotional health problems, communicable diseases, skin infections, nutritional deficiencies, posture conditions, dental health problems, other health conditions and problems
2. Results of follow-through given at teacher-nurse conference
3. Notification from family physician or family dentist of completion of medical or dental care
4. Results of second series of posture screening
5. Emergency care records
6. Pupil-teacher conferences during health counseling
7. Teacher-parent conferences following first conference
8. Results of adapted physical education activities
9. Changes in pupil dietary habits at noonday school meal and supplementary feeding
10. Teacher's observations of pupil's relations with other pupils, and his aptitudes, fatigue levels, and conduct

## Pupil Health Practices

1. Continuous and systematic teacher observation of pupil's actions
2. Results of pupil demonstrations in American Red Cross First Aid, care of the human body, safety education
3. Results of standardized health practices measuring devices
  - a. Johns and Juhnke's *Health Practice Inventory*<sup>7</sup>
  - b. Colebank's *Health Behavior Inventory*<sup>8</sup>
4. Follow-through (nurse-teacher conference)
5. Changes in pupil dietary habits at noonday school meal
6. Pupil's accidents and illness reported
7. Pupil's changes in classroom housekeeping, sanitary procedures, accident awareness, etc., on school grounds and in school building
8. Results of pupil surveys
9. Result of pupil rating scales
10. Results of pupil skill tests

## Pupil Health Attitudes

1. Results of health attitude measuring devices
  - a. Mayshark's *Health and Safety Attitude Scale*<sup>9</sup>
  - b. Myer's *Safety Attitude Scale for the Seventh Grade*<sup>10</sup>
2. Teacher-pupil conferences following first conference
3. Teacher-parent conference following the first conference
4. Changes in the pupil's conversations regarding his health
5. Changes in pupil creative efforts
6. Results of teacher-guided class discussions
7. Pupil questions directed to the teacher
8. Results of successive pupil-made rating scales
9. Questions placed in the question box
10. Results of pupil questionnaires
11. Changes in pupil dramatization procedures
12. Results of pupil panel discussions and debates

<sup>7</sup> Edward B. Johns and Warren L. Juhnke. *Health Practice Inventory*. Stanford, Calif.: Stanford University Press, 1952.

<sup>8</sup> Albert D. Colebank. *Health Behavior Inventory* (junior high/grades 7-8-9). Monterey: California Test Bureau, 1962.

<sup>9</sup> Cyrus Mayshark. "A Health and Safety Attitude Scale for the Seventh Grade." *Research Quarterly*, 27:52 (March 1956).

<sup>10</sup> Frank Myers. "Safety Attitude Scale for the Seventh Grade." *Research Quarterly*, 29:320 (October 1958).

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|------------------------|--|
| Pupil Health Interests | <ol style="list-style-type: none"> <li>1. Comparison of results of pupil interest inventories with               <ol style="list-style-type: none"> <li>a. Latagne's "Health Interests of 10,000 Secondary School Students"<sup>11</sup></li> </ol> </li> <li>2. Results of pupil interest inventories</li> <li>3. Results of pupil interest surveys and questionnaires</li> <li>4. Results of pupil check lists</li> <li>5. Changes in pupil dramatization procedures</li> <li>6. Results of pupil opinion polls</li> <li>7. Changes in choice of health education reading materials</li> <li>8. Changes in pupil written work on health education</li> <li>9. Changes in pupil conversation</li> <li>10. Changes in pupil choice of health education activities</li> <li>11. Pupil questions directed to the teacher</li> <li>12. Changes in class discussion</li> <li>13. Questions placed in question box</li> </ol> |
| Pupil Health Knowledge | <ol style="list-style-type: none"> <li>1. Results of standardized health knowledge tests               <ol style="list-style-type: none"> <li>a. Crow and Ryan's <i>Acorn National Achievement Test, Grades 3 to 6 (Health and Safety)</i><sup>12</sup></li> <li>b. <i>Elementary Health: Every Pupil Scholarship Test</i><sup>13</sup></li> <li>c. Family Life Publications' <i>Sex Knowledge Inventory</i><sup>14</sup></li> <li>d. <i>Health Education and Hygiene, Grades 7, 8, 9. Ohio Scholarship Tests</i><sup>15</sup></li> <li>e. <i>Kilander Health Knowledge Test for High School Students</i><sup>16</sup></li> <li>f. Shaw and Troyer's <i>Health Education Test: Knowledge and Application</i><sup>17</sup></li> </ol> </li> </ol>   |

<sup>11</sup> Joseph Lantagne. "Health Interests of 10,000 Secondary School Students." *Research Quarterly*, 23:330 (October 1952).

<sup>12</sup> Lester Crow and Loretta Ryan. *Acorn National Achievement Test, Grades 3 to 6*. Rockville Centre, N.Y.: Acorn Publishing Company, Inc., 1960.

<sup>13</sup> Bureau of Educational Measurements. Kansas State Teachers College. *Elementary Health: Every Pupil Scholarship Test*. Emporia: Kansas State Teachers College, 1959-1960.

<sup>14</sup> Family Life Publications, Inc. *Sex Knowledge Inventory*. Durham, N.C.: Family Life Publications, Inc., 1951.

<sup>15</sup> *Health Education and Hygiene, Grades 7, 8, 9. Ohio Scholarship Tests*. Columbus: State Department of Education, 751 Northwest Blvd., semiannually.

<sup>16</sup> *Kilander Health Knowledge Test: Evaluation and Adjustment Series*. New York: Harcourt, Brace & World, Inc., 1952.

<sup>17</sup> John H. Shaw and Maurice E. Troyer. *Health Education Test: Knowledge and Application*. Rockville Centre, N.Y.: Acorn Publishing Company, Inc., Form A revised 1956. Form B revised 1957.

g. Speer and Smith's *National Achievement Tests: Health Test*<sup>18</sup>

h. Veenker's *Health Knowledge Test for Seventh Grade*<sup>19</sup>

2. Changes in class discussion
3. Pupil questions directed to the teacher
4. Oral responses to teacher's questions
5. Results of pupil panels
6. Results of pupil debates
7. Results of teacher-made health education knowledge tests

## TEACHER-MADE KNOWLEDGE TESTS

Teacher-made health knowledge tests can be subjective or objective. Four common examples of the subjective type of knowledge tests will be given. First, a question is stated, "What are the seven danger signs of cancer?" Second, the teacher asks the pupil, "Explain the difference between benign and malignant cell growths or list the possible treatments used in the medical care of malignant cell growth." Third, a paragraph is given with specific information such as, "The American Cancer Society promotes research into suspected causes of cancer and into many radiation and surgical techniques used in treatment. What else does the American Cancer Society do?" Fourth, a paragraph of a designated number of words is to be written, for example, "Write a fifty-word paragraph concerning the National Cancer Institute." These and other examples of subjective test questions have advantages for the teacher. Students either know or do not know the answers and have no assistance as in recognition and recall objective test questions. The teacher can correct misspelled words. The students have an opportunity to organize their fund of information logically. Students reveal misinformation as well as false beliefs when they answer subjective test questions such as these. There are also disadvantages. Subjective questions are time-consuming to grade, have little chance to indicate the reliability and validity of the test item, and depend on the judgment of the grader.

The objective type of test can include specific and detailed items revealing the extent of the student's fund of information. It can cover a wide range of teaching content. Through item analysis, the objective test can indicate distinct weaknesses in test items as well as in the student's fund of information. Over the years, the test can be refined to reach a reasonable degree of validity and reliability. The objective test is easier

to grade, although requires full instructions for repeated procedures in grading. It does not rely on the whims of the grader and is difficult to construct.

Before attempting construction of objective test items, the teacher should review carefully the subject matter familiar to students. From that subject matter, significant test items should be compiled. Items with no relation to the subject matter should be excluded. A careful check should be made so that by using significant items, a complete coverage of the subject matter is achieved. Items generally accepted, controversial within a specific area of health education, too obvious, ambiguous, half-true, outdated, and misleading should be eliminated. The type of test form should be selected. Five possible test forms will be presented: (1) recognition—multiple choice and matching; (2) recall-completion; and (3) problem-to-be-solved; and (4) true-false.

The directions for the entire test should be placed in an introductory paragraph so that students will understand that there may be more than one part to the test. Each of the test forms might constitute a part of the test.

Before each part of the test, there should be a full set of directions for answering the item, with an example given. It is possible to include the value of each test item with the directions, thus enabling the student to estimate his possible grade.

## MULTIPLE CHOICE

The teacher should be well informed about the construction of each test form. These suggestions are given for the multiple choice test form:

1. State, briefly, the item with five alphabetical choices.
2. Have the student place his choice to the left of the item, for ease in grading.
3. Word the choices briefly but concisely.
4. Make sure all choices are plausible.
5. Have one choice entirely correct.
6. Avoid any set pattern of answers.
7. Watch sentence structure so that sentences are complete.
8. Score by counting correct answers.

**PART I: Multiple Choice.** In the bracket provided to the left of the question, place the letter of the best choice.

*Example:*

- (d) The medical specialist, who treats diseases of the eyes and performs eye surgery, is an:
- a. Optometrist
  - b. Optician

- c. Orthoptist
  - d. Ophthalmologist
  - e. Otologist
- 

- ( ) 1. When the eyeball is too long from front to back and the light rays cross in front of retina, this visual defect is called:
- a. Myopia
  - b. Hyperopia
  - c. Presbyopia
  - d. Astigmatism
  - e. Strabismus

### MATCHING QUESTIONS

For matching questions, as a test form, these suggestions may assist the teacher.

1. Take the designated number of test items to be used in matching questions and group into sets of five items to a set.
2. Select a topic in health education to be covered within one set and relate each item to that topic.
3. Have the student place his choice in the bracket provided to the left of the column of single words for ease of grading.
4. Give concisely, in incomplete sentences, the statement to be matched in the right-hand column.
5. Use single words in the left-hand column.
6. Alphabetize the statements in the right-hand column.
7. Have each single word matching a statement of the right-hand column.
8. Scatter choices so that no pattern is established.
9. Draw a single line under each set of five items indicating that the topic within that set is complete.
10. Score by counting correct responses.

**PART II: Matching Questions.** In the bracket provided to the left of the single word, place the letter representing the best statement. *Do not use a letter more than once.*

*Example:*

- |                 |                        |
|-----------------|------------------------|
| (d) Heroin      | a. Sleeping powders    |
| (e) Marijuana   | b. Coca leaves         |
| (b) Cocaine     | c. Used during surgery |
| (a) Barbiturate | d. "Main lining"       |
| (c) Morphine    | e. "Reefers"           |
-



- |                        |  |
|------------------------|--|
| ( ) Seconal            | a. Barbiturates  |
| ( ) Tolerance (heroin) | b. Pain-killers and stomach sweeteners                                     |
| ( ) Codeine            | c. Opium derivative  |
| ( ) Bromides           | d. Diminished effect of same dosage of narcotic over a long period of time |
| ( ) "Goof-balls"       | e. Barbiturate trade name  |

### COMPLETION

Completion questions, a type of recall test form, need careful preparation. Each item must be clear and definite. These suggestions are given:

1. Word each item so the meaning is clear.
2. Construct items around the missing word.
3. Use one blank for one missing word.
4. Avoid more than two blanks within one item.
5. Provide "a," "an," and "the" within the item.
6. Use complete sentences with the missing word as the single blank.
7. Have the student place the word used to complete the blank to the left of the item for ease of grading.
8. Provide synonyms and terms used for each blank on the scoring key.
9. Score by counting correct answers.

**PART III: Completion.** In the following statements, a blank represents a missing word. Place the missing word in the column to the left.

*Example:*

Ovaries      The human egg cell is produced in the female \_\_\_\_\_

1. \_\_\_\_\_ The period of a woman's life when menstruation normally ceases is the \_\_\_\_\_

### PROBLEM-TO-BE-SOLVED

The problem-to-be-solved type of test form, used in health education, states a series of incidents presenting a problem. In order to solve the problem, the student must carefully read each incident, compile all given facts within a series of incidents, analyze the compilation, decide the steps to be taken in solving the problem, organize the steps in a logical manner, and state the solution to the problem. These suggestions are given:

1. Word the problem simply.
2. Avoid too many incidents within a problem.
3. Provide incidents revealing whether the student does analyze the problem, decides the steps to be taken, and can organize the solution in a logical manner.
4. Be aware of all possibilities in the solution of the problem.
5. Score the problem by giving credit to each part of the solved problem.

**PART IV: Problem-to-Be-Solved.** Read the problem carefully. Consider all given facts. State what you would do first, second, third, etc.

*Example:*

A housewife preparing a vegetable salad accidentally slices her left forefinger between the palm and the second digit. The knife has cut deep and exposes muscles, tendons, and bones of the left forefinger.

**Solution:** Apply direct pressure over the wound with sterile gauze. When bleeding continues, apply pressure at left brachial artery. Treat for shock. When bleeding is controlled, apply fresh sterile gauze over wound. Place a figure eight-of-hand and wrist bandage over the gauze to hold the gauze in place without further injury to muscles and tendons. Seek immediate medical care.

---

**Problem 1.** A man has fallen from a ladder. He is unconscious. There is bleeding from the right lower leg. The ends of the right lower leg bones have torn through flesh and clothes. There is bleeding at the right cheek.

*Solution:*

**TRUE-FALSE**

The true-false type of test form gives a complete statement which is either "True" or "False." It can be highly discriminating and useful. The true-false type of test form is easy to construct, helpful in discovering misconceptions, suitable for situations involving just two alternatives, and easy to score. These suggestions are given;

1. Use straightforward statements.
2. Make the important part of the statement clear to the student.
3. Avoid any set pattern of answers and ambiguous statements.
4. Avoid continuous use of precise numbers in every statement.
5. Avoid statements that are too long in length.
6. Avoid the use of "only," "never," "always," "all," "usually," "frequently," "not," "none," and "almost always."

**PART V: True-False.** Determine which of the following statements are True or False. Circle correct answer. If the statement is incorrect, reword it to make it correct in the space provided.

*Example:*

- T ☒ F 1.      Teeth should be brushed three times a day.  
                   Teeth should be brushed after eating.
- 

- T F 1.      Dentifrices are more important than tooth brushing.

When all desired test forms have been utilized, the teacher should indicate the method of scoring each part of the test and prepare a scoring key. For ease of handling, the scoring key should fit directly in line with each test item. In the completion test, synonyms should be on the scoring key. When the tests are to be scored by persons other than the teacher, directions should be given in the use of the scoring key.

In addition, there is the diagram, a type of recall test form. The diagram item is commonly used with identification of parts of the human anatomy, e.g., parts of the human eye. On each part of the eye to be identified, a number is placed. To the left of the diagram are single lines having the same numbers as found on the eye. The student is to place the correct name of that part of the eye after the number identifying that part.

When the test is completely constructed, the pretesting takes place. During the pretesting, the teacher uses students familiar with the test items but who will not be given the final test. Items creating student questions and items not clearly stated can be identified and eliminated.

After the test has been given to the students for whom it was prepared, an item analysis takes place. The statistical tool used for this purpose is the index of discrimination. In addition, the teacher may wish to determine the difficulty rating of a test item. Limits may be set to exclude those test items not answered by 25 percent and less of the group and those items answered by 75 percent and more of the group, concentrating the difficulty rating around 50 percent.

#### EVALUATIVE CRITERIA IN HEALTH EDUCATION

The teacher not only can evaluate the pupil's health status, practices, attitudes, interests, and knowledge but also has evaluative criteria for all phases of health education. Some of these criteria are:

Committee on School Health Councils. New York State Council on Health Teaching. *Bulletin 4—Health Instruction*. 1432 Northern Boulevard, Roslyn, N.Y., n.d.

- Cushman, Wesley. *School Health Instruction Survey Form*. Ohio State University, Columbus, Ohio, n.d.
- Illinois Curriculum Program Consensus Study Number 4. Inventory C. *What Should We Do to Strengthen Our School's Health Education Program?* Department of Public Instruction, State of Illinois, March 1952.
- Illinois Secondary School Curriculum Program Consensus Study Number 4. Inventory A. *What Do You Think about Our School's Health Education Program?* and Inventory B. *In What Respects Should We Strengthen Our School's Health Education Program?* Department of Public Instruction, State of Illinois, August 1951.
- Johns, Edward. "School Health Education Evaluative Study, Los Angeles Area: An Example of a Modern Evaluation Plan." *Journal of School Health*, 32:5 (January 1962).
- Kilander, H. F. "A Guide for the Evaluation of the Health Instruction Program." *School Health Education*. New York: The Macmillan Company, 1962, p. 481.
- University of the State of New York, State Education Department. *Evaluation of School Health Education*. Albany: The Department, December 1952.

## TOTAL SCHOOL HEALTH PROGRAM

In this chapter, evaluative criteria for school health services, healthful school living, and health education have been presented. There are evaluative criteria that include the *total* school health program. Some of these criteria are:

- Criteria for Evaluating the Elementary School Health Program*. Sacramento: California State Department of Education, 1962.
- Haag, Jessie Helen. *A Checklist Appraising the Elementary and Secondary School Health Program*. Bulletin 519. Austin: Texas Education Agency, 1951. Reprint 1955.
- Joint Committee of the Minnesota Department of Health and the State Department of Education. *School Health Manual* (2d ed., rev.). St. Paul: State Department of Education, 1946.
- Michigan State Department of Education. *A Checklist for Surveying the Secondary School Health Program*. Bulletin 346. Lansing: The Department, 1946.
- Oregon State College. *A School Health Program Evaluation Scale*. Corvallis: The College, 1955.
- School Health Program Surveys*. Bloomington, Indiana: School of Health, Physical Education, and Recreation, Indiana University, n.d.
- Smith, Sara Louise. *Evaluation of School Health Program by Classroom Teachers* (rev. ed.). Tallahassee: Florida State University, 1959.
- Wisconsin Cooperative School Health Program. *Administrative Outline for the Study of the School Health Program*. Madison: Department of Public Instruction, 1946.

The results of evaluation of the total school health program can reveal whether the program does or does not influence the pupil's physical and mental health status and the pupil's health practices, attitudes, interests,

and knowledge. The results can show the strengths and weaknesses of school health services, healthful school living, and health education. The results can disclose the existence or nonexistence of the organization and administration of the program. Finally, the results of evaluation can reveal whether school and community personnel do or do not work together in the development of the school health program.

### REFERENCES FOR FURTHER STUDY

- Anderson, C. L. *School Health Practice* (3d ed.). St. Louis: The C. V. Mosby Company, 1964.
- Byrd, Oliver. *School Health Administration*. Philadelphia: W. B. Saunders Company, 1964.
- Clark, H. Harrison. *The Application of Measurement to Health and Physical Education* (3d ed.). Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1959.
- Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. *Health Education* (5th ed.) and *Healthful School Living*. Washington, D.C.: National Education Association, 1961 and 1957.
- Irwin, Leslie, Harold J. Cornacchia, and Wesley M. Staton. *Health in Elementary Schools*. St. Louis: The C. V. Mosby Company, 1962.
- , and Cyrus Mayshark. *Health Education in Secondary Schools*. St. Louis: The C. V. Mosby Company, 1964.
- Kilander, H. F. *School Health Education*. New York: The Macmillan Company, 1962.
- LaSalle, Dorothy, and Gladys Geer. *Health Instruction for Today's Schools*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963.
- Turner, C. E., C. Morley Sellery, and Sara Louise Smith. *School Health and Health Education* (4th ed.). St. Louis: The C. V. Mosby Company, 1961.
- Willgoose, Carl. *Evaluation in Health Education and Physical Education*. New York: McGraw-Hill, Inc., 1961.

## APPENDIXES

# APPENDIX A

Section 1

PUBLIC SCHOOLS

STATE

## HEALTH RECORD

(Medical and dental examinations; screening for hearing, vision, and nutritional status; posture screening; follow-through; teachers' observations)

THE INFORMATION CONTAINED IN EACH PART OF THIS HEALTH RECORD IS TO REMAIN CONFIDENTIAL AND IS A CUMULATIVE RECORD OF

LAST NAME

FIRST NAME

MIDDLE NAME

STREET ADDRESS

TOWN

COUNTY

STREET ADDRESS

TOWN

COUNTY

STREET ADDRESS

TOWN

COUNTY

PHYSICIAN TO BE CALLED IN EMERGENCY

TELEPHONE

M.D.

M.D.

M.D.

DENTIST TO BE CALLED IN EMERGENCY

TELEPHONE

D.D.S.

D.D.S.

D.D.S.

### HOME OR BUSINESS ADDRESSES AND TELEPHONE

FATHER

TELEPHONE

MOTHER

TELEPHONE

NEXT OF KIN

TELEPHONE

TEACHER OBSERVATIONS OF PHYSICAL AND MENTAL HEALTH PROBLEMS

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE

DATE



## PUBLIC SCHOOLS

STATE

## PUPIL HEALTH HISTORY

(to be filled out by the parent, nurse, student or teacher previous to the medical and dental examinations)

NAME \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_ SEX \_\_\_\_\_

RECORD OF ILLNESS (Check those which occurred at any time; star (\*) significant illness within the past five years).

FREQUENT COLDS _____	MEASLES _____	CHOREA _____
INFLUENZA _____	MUMPS _____	HEART DISEASE _____
EAR INFECTION _____	WHOOPING COUGH _____	RHEUMATIC FEVER _____
SINUSITIS _____	SCARLET FEVER _____	BONE & JOINT DISEASE _____
TONSILLITIS _____	POLIOMYELITIS _____	ASTHMA _____
BRONCHITIS _____	TYPHOID FEVER _____	MAY FEVER _____
PNEUMONIA _____	APPENDICITIS _____	HIVES _____
TUBERCULOSIS _____	HERNIA _____	SKIN DISEASE _____
CHICKEN POX _____	ANEMIA _____	DIABETES _____
DIPHTHERIA _____	SMALLPOX _____	KIDNEY DISEASE _____

OTHER, (SPECIFY) \_\_\_\_\_

## TUBERCULOSIS CONTROL (physician or nurse fills in)

TUBERCULIN	POSITIVE _____	NEGATIVE _____	DATE _____
	POSITIVE _____	NEGATIVE _____	DATE _____
TEST	POSITIVE _____	NEGATIVE _____	DATE _____

## IMMUNIZATION RECORD (record year) (physician or nurse fills in)

SMALLPOX _____	WHOOPING COUGH _____	TYPHOID _____
POLIO _____	DIPHTHERIA _____	TETANUS _____
OTHER _____		

## RECORD OF SERIOUS INJURIES AND OPERATIONS (record year)

INJURIES \_\_\_\_\_ OPERATIONS \_\_\_\_\_

## MENSTRUATION

REGULAR _____	IRREGULAR _____
DURATION _____	SEVERE _____

DO ANY OF THE FOLLOWING OCCUR FREQUENTLY? (Yes... No... Doubtful... Date...)

ACHING EYES_____	HOARSENESS_____	HEART AND LUNGS_____
BLINDNESS_____	NASAL DISCHARGE_____	CHEST PAIN_____
BLURRED VISION_____	NOSEBLEED_____	PALPITATIONS_____
INFLAMED EYELIDS_____	SORE THROAT_____	SHORTNESS OF BREATH_____
RECURRING HEADACHE_____	ABDOMINAL PAIN_____	PAINFUL URINATION_____
STYES_____	DIARRHEA_____	FREQUENT URINATION_____
COLOR-BLIND_____	NAUSEA_____	WEIGHT—SUDDEN GAIN_____
DEAFNESS_____	JAUNDICE_____	—SUDDEN LOSS_____
DISCHARGE FROM EARS_____	VOMITING_____	FAINTING_____
TOOTHACHE_____	CONSTIPATION_____	NIGHT SWEATS_____
COUGH (PROLONGED)_____	BED WETTING_____	

**SOCIAL AND EMOTIONAL HEALTH**  
(Check which of the following has been observed)

**ELEMENTARY SCHOOL**

SELFISH\_\_\_\_\_

EXCITABLE\_\_\_\_\_

ANGERS EASILY\_\_\_\_\_

VERY EASY TO MANAGE\_\_\_\_\_

RESENTFUL\_\_\_\_\_

IS GENEROUS TO OTHERS\_\_\_\_\_

JEALOUS\_\_\_\_\_

DEPENDABLE\_\_\_\_\_

LIKES TO PLAY WITH OTHERS\_\_\_\_\_

HAS MANY FEARS\_\_\_\_\_

EASILY DISCOURAGED\_\_\_\_\_

SHY\_\_\_\_\_

NAIL BITING\_\_\_\_\_

THUMB SUCKING\_\_\_\_\_

HAPPY DISPOSITION\_\_\_\_\_

ORDERLY\_\_\_\_\_

HELPFUL AROUND THE HOUSE\_\_\_\_\_

HAS MANY FRIENDS\_\_\_\_\_

SELF-RELIANT\_\_\_\_\_

PREFERS TO BE ALONE\_\_\_\_\_

**WORRIES A GREAT DEAL****SECONDARY SCHOOL**

HAPPY DISPOSITION\_\_\_\_\_

ORDERLY\_\_\_\_\_

HAS MANY FRIENDS\_\_\_\_\_

IS A LEADER\_\_\_\_\_

IS A FOLLOWER\_\_\_\_\_

HAS FEW FRIENDS\_\_\_\_\_

PREFERS TO BE ALONE\_\_\_\_\_

EASILY DISCOURAGED\_\_\_\_\_

WORRIES A GREAT DEAL\_\_\_\_\_

SELF-RELIANT\_\_\_\_\_

RESENTFUL\_\_\_\_\_

HAS MANY FEARS\_\_\_\_\_

JEALOUS\_\_\_\_\_

DEPENDABLE\_\_\_\_\_

SELFISH\_\_\_\_\_

EXCITABLE\_\_\_\_\_

SUSPICIOUS\_\_\_\_\_

AWKWARD\_\_\_\_\_

DAYDREAMING\_\_\_\_\_

EASILY EMBARRASSED\_\_\_\_\_

LOSES TEMPER\_\_\_\_\_

TOLERANT\_\_\_\_\_

DATE OF LAST DENTAL EXAMINATION OR TREATMENT\_\_\_\_\_

DATE LAST ATTENDED BY FAMILY PHYSICIAN AND REASON\_\_\_\_\_

PUBLIC SCHOOLS

STATE

## MEDICAL EXAMINATION

(to be filled out by the physician and may be mailed to the principal  
of the school or may be kept in the physician's office)

NAME \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_ SEX \_\_\_\_\_

PARENTS' NAMES \_\_\_\_\_

FILL IN EACH SPACE; USE SPACE AT BOTTOM FOR REMARKS

DATE						
GENERAL APPEARANCE						
GENERAL NUTRITION						
POSTURE						
SKIN						
SCALP						
INTERDIGITAL						
EYES AND LIDS						
VISION WITHOUT GLASSES	RL	RL	RL	RL	RL	RL
VISION WITH GLASSES	RL	RL	RL	RL	RL	RL
OTHER						
EARS						
GENERAL CONDITION	RL	RL	RL	RL	RL	RL
DISCHARGE	RL	RL	RL	RL	RL	RL
HEARING	RL	RL	RL	RL	RL	RL
NASOPHARYNX						
TONSILS						
NASAL OBSTRUCTION						
MOUTH						
TEETH						
SOFT TISSUES						
THYROID						
LYMPH GLANDS						
CERVICAL						
OTHER						
LUNGS						

HEART						
MURMURS						
ENLARGEMENT						
PULSE RATE						
ABDOMEN						
GENERAL						
SCARS						
HERNIA						
BONES AND MUSCLES						
CHEST						
SPINE						
UPPER EXTREMITIES						
LOWER EXTREMITIES						
NERVOUS SYSTEM REFLEXES						
EMOTIONAL PROBLEMS						
PHYSICIAN'S SIGNATURE:						

REMARKS:

## PUBLIC SCHOOLS

STATE

# PHYSICIAN'S REPORT TO THE SCHOOL ON SIGNIFICANT FINDINGS OF THE MEDICAL EXAMINATION

(to be filled out by the physician and mailed to the school principal)

NAME \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

PARENTS' NAMES \_\_\_\_\_

## RECOMMENDATIONS FOR CORRECTION

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

## RECOMMENDATIONS TO THE TEACHER

IS PUPIL CAPABLE OF CARRYING A FULL PROGRAM OF SCHOOL WORK?	Yes _____	No _____
	Yes _____	No _____
	Yes _____	No _____

SHOULD THERE BE RESTRICTIONS ON UP-AND-DOWN STAIRS TRAVEL?	Yes _____	No _____
	Yes _____	No _____
	Yes _____	No _____

IS SPECIAL SEATING PLACEMENT RECOMMENDED?	Yes _____	No _____
	Yes _____	No _____
	Yes _____	No _____

DO YOU ADVISE SUPPLEMENTARY IN-BETWEEN-MEAL FEEDING?	Yes _____	No _____
	Yes _____	No _____
	Yes _____	No _____

DOES PUPIL HAVE ANY IRREMIABLE DEFECTS?	Yes _____	No _____
	Yes _____	No _____
	Yes _____	No _____

IS THERE EVIDENCE OF UNUSUAL EMOTIONAL TENDENCIES?	Yes _____	No _____
	Yes _____	No _____
	Yes _____	No _____

## REMARKS TO AID TEACHER

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

## CLASSIFICATION FOR PHYSICAL EDUCATION (Check the one best suited to student)

	DATE	DATE	DATE	DATE
A. Unlimited physical education activity including interscholastic sports				
B. Moderate physical activity Limited to physical education classes, excluding interscholastic sports and more strenuous activities				
C. Adapted individual physical education				
D. Social recreation including quiet games and activities involving little or no physical exertion				

## RECOMMENDED ACTIVITIES FOR "B" AND "C" CLASSIFICATIONS

DATE
DATE
DATE
DATE

PLEASE INDICATE ANY SPECIAL NEED FOR DENTAL, PSYCHIATRIC, MEDICAL, OR SURGICAL CARE.

DATE \_\_\_\_\_ SIGNATURE OF EXAMINING PHYSICIAN \_\_\_\_\_ M.D.

DATE \_\_\_\_\_ SIGNATURE OF EXAMINING PHYSICIAN \_\_\_\_\_ M.D.

DATE \_\_\_\_\_ SIGNATURE OF EXAMINING PHYSICIAN \_\_\_\_\_ M.D.

DATE \_\_\_\_\_ SIGNATURE OF EXAMINING PHYSICIAN \_\_\_\_\_ M.D.

PUBLIC SCHOOLS

STATE

## FOLLOW-THROUGH

*(to be filled out by the school nurse)*

NAME \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

PARENTS' NAMES \_\_\_\_\_

NOTIFICATION OF  
PHYSICIAN OF SCREENING  
RESULTSFOLLOW-THROUGH OF  
MEDICAL  
RECOMMENDATIONSFOLLOW-THROUGH OF  
DENTAL  
RECOMMENDATIONS

DATE \_\_\_\_\_ DATE \_\_\_\_\_ DATE \_\_\_\_\_

DATE \_\_\_\_\_ DATE \_\_\_\_\_ DATE \_\_\_\_\_

DATE \_\_\_\_\_ DATE \_\_\_\_\_ DATE \_\_\_\_\_

DATE \_\_\_\_\_ DATE \_\_\_\_\_ DATE \_\_\_\_\_

DATE \_\_\_\_\_ DATE \_\_\_\_\_ DATE \_\_\_\_\_

DATE \_\_\_\_\_ DATE \_\_\_\_\_ DATE \_\_\_\_\_

DATE \_\_\_\_\_ DATE \_\_\_\_\_ DATE \_\_\_\_\_

PUBLIC SCHOOLS

STATE

## HEARING AND VISION SCREENING

NAME \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

PARENTS' NAMES \_\_\_\_\_

## AUDIOGRAM

Date \_\_\_\_\_ By \_\_\_\_\_ Grade \_\_\_\_\_

WEIGHT AND HEIGHT		
Date	Ht.	Wt.

	250	500	1000	2000	4000	8000
10						
0						
10						
20						
30						
40						
50						
60						
70						
80						
90						
100						
Left Ear—X      Right Ear—O						

## AUDIOGRAM

Date \_\_\_\_\_ By \_\_\_\_\_ Grade \_\_\_\_\_

	250	500	1000	2000	4000	8000
10						
0						
10						
20						
30						
40						
50						
60						
70						
80						
90						
100						
Left Ear—X      Right Ear—O						

	250	500	1000	2000	4000	8000
10						
0						
10						
20						
30						
40						
50						
60						
70						
80						
90						
100						
Left Ear—X      Right Ear—O						





PUBLIC SCHOOLS

STATE

## DENTAL RECORD

(to be filled out by dentist; may be mailed to principal or kept in dentist's office)

NAME \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

PARENTS' NAMES \_\_\_\_\_

## TOOTH CHART

*Record on the Tooth Chart conditions of each tooth. Permanent teeth are referred to in numbers. Deciduous teeth are referred to in letters.*

RIGHT SIDE OF PATIENT								LEFT SIDE OF PATIENT							
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
E D C B A								A B C D E							

1ST DENTAL EXAM

UPPER

LOWER

2D DENTAL EXAM

UPPER

LOWER

3D DENTAL EXAM

UPPER

LOWER

4TH DENTAL EXAM

UPPER

LOWER

5TH DENTAL EXAM

UPPER

LOWER

6TH DENTAL EXAM

UPPER

LOWER

7TH DENTAL EXAM

UPPER

LOWER

8TH DENTAL EXAM

UPPER

LOWER

PUBLIC SCHOOLS \_\_\_\_\_ STATE \_\_\_\_\_

NAME \_\_\_\_\_ PARENTS' NAMES \_\_\_\_\_

## DENTAL RECOMMENDATIONS

6TH DENTAL EXAM

DATE

D.D.S.

5TH DENTAL EXAM

DATE

D.D.S.

*Note below any abnormal or pathological conditions and special examinations requested, such as x-rays.*

1ST DENTAL EXAM

2D DENTAL EXAM

3D DENTAL EXAM

4TH DENTAL EXAM

5TH DENTAL EXAM

6TH DENTAL EXAM

7TH DENTAL EXAM

8TH DENTAL EXAM

REMARKS:

4TH DENTAL EXAM

DATE \_\_\_\_\_

D.D.S.

3D DENTAL EXAM

DATE \_\_\_\_\_

D.D.S.

2D DENTAL EXAM

DATE \_\_\_\_\_

D.D.S.

1ST DENTAL EXAM

DATE \_\_\_\_\_

D.D.S.

## PUBLIC SCHOOLS

STATE

## POSTURE SCREENING

NAME \_\_\_\_\_ SEX \_\_\_\_\_  
 PARENTS' NAMES \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

## POSTURE SCREENING

HEAD						
CHEST						
ABDOMEN						
SHOULDERS						
SCAPULA						
KYPHOSIS						
LORDOSIS						
HIP						
SCOLIOSIS						
KNEES						
FEET						
TRANSVERSE ARCH						
LONGITUDINAL ARCH						
PRONATION						
DATE						
EXAMINER						

## ADAPTED PHYSICAL EDUCATION FOR POSTURAL CONDITIONS

DATE: \_\_\_\_\_  
 SUMMARY OF PROGRESS: \_\_\_\_\_

DATE: \_\_\_\_\_  
 SUMMARY OF PROGRESS: \_\_\_\_\_

DATE: \_\_\_\_\_  
 SUMMARY OF PROGRESS: \_\_\_\_\_

DATE: \_\_\_\_\_  
 SUMMARY OF PROGRESS: \_\_\_\_\_

PUBLIC SCHOOLS

STATE

SUMMARY OF ALL HEALTH DATA TO BE USED BY TEACHER  
IN INSTRUCTIONAL PROGRAM

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

## APPENDIX B

### SOURCES OF FREE AND INEXPENSIVE HEALTH EDUCATION PRINTED MATERIALS OF INSTRUCTION

1. Aetna Life Insurance Company  
Education Department  
Hartford, Conn.
2. Alcoholics Anonymous  
P.O. Box 459, Grand Central Annex  
New York, N.Y.
3. American Academy of Pediatrics  
1801 Hinman Avenue  
Evanston, Ill.
4. American Association for Health,  
Physical Education, and Recreation  
1201 Sixteenth St., N.W.  
Washington, D.C.
5. American Can Company  
230 Park Ave.  
New York, N.Y.
6. American Cancer Society  
521 West 57th St.  
New York, N.Y.
7. American College Health Association  
Gannett Medical Clinic  
Ithaca, N.Y.
8. American Dairy Association  
20 North Wacker Drive  
Chicago, Ill.
9. American Dental Association  
222 E. Superior St.  
Chicago, Ill.
10. American Diabetes Association  
1 E. 45th St.  
New York, N.Y.
11. American Dietetic Association  
620 N. Michigan Ave.  
Chicago, Ill.
12. American Foundation for the  
Blind  
15 W. 16th St.  
New York, N.Y.
13. American Heart Association  
44 E. 23rd St.  
New York, N.Y.
14. American Home Economics Association  
1600 20th St., N.W.  
Washington, D.C.
15. American Institute of Baking  
400 E. Ontario St.  
Chicago, Ill.
16. American Medical Association  
Department of Community  
Health and Health Education  
535 N. Dearborn St.  
Chicago, Ill.
17. American National Red Cross  
17th and D Sts.  
Washington, D.C.
18. American Nurses Association  
10 Columbus Circle  
New York, N.Y.
19. American Optometric Association  
4030 Chouteau Ave.  
St. Louis, Mo.
20. American Physical Therapy Association  
1790 Broadway  
New York, N.Y.
21. American Public Health Association  
1790 Broadway  
New York, N.Y.
22. American School Health Association  
515 East Main St.  
Kent, Ohio
23. American Searing Company  
Grand Rapids, Mich.
24. American Social Health Association  
1790 Broadway  
New York, N.Y.
25. Arthritis and Rheumatism Foundation  
23 West 45th St.  
New York, N.Y.

26. Association for Physical and Mental Rehabilitation  
1472 Broadway  
New York, N.Y.
27. Better Vision Institute  
630 Fifth Ave.  
New York, N.Y.
28. Borden Company  
285 Madison Ave.  
New York, N.Y.
29. Bristol-Myers  
45 Rockefeller Plaza  
New York, N.Y.
30. Carnation Milk Company  
Box 2035  
Los Angeles, Calif.
31. Cereal Institute  
135 S. La Salle St.  
Chicago, Ill.
32. Educational Facilities Laboratories  
477 Madison Ave.  
New York, N.Y.
33. Eli Lilly Company  
Indianapolis, Ind.
34. Employers Mutual Liability Insurance Company  
407 Grant St.  
Wausau, Wis.
35. Equitable Life Assurance Society of the United States  
1285 Avenue of the Americas  
New York, N.Y.
36. Evaporated Milk Association  
228 N. La Salle St.  
Chicago, Ill.
37. General Mills, Educational Section  
Department of Public Services  
Minneapolis, Minn.
38. H. J. Heinz Company  
P. O. Box 57  
Pittsburgh, Pa.
39. Hogg Foundation for Mental Health  
The University of Texas  
Austin, Texas
40. International Union for Health Education of the Public, American Chapter, ANCHEP  
800 Second Ave.  
New York, N.Y.
41. Johnson and Johnson  
New Brunswick, N.J.
42. Kellogg Company  
Battle Creek, Mich.
43. Kimberly-Clark Corporation  
Educational Department  
Neenah, Wis.
44. Kraft Cheese Company  
500 Peshtigo Court  
Chicago, Ill.
45. Lever Brothers  
390 Park Ave.  
New York, N.Y.
46. Licensed Beverage Industries, Inc.  
155 East 44th St.  
New York, N.Y.
47. Maternity Center Association  
48 East 92nd St.  
New York, N.Y.
48. Mental Health Materials Center  
104 East 25th St.  
New York, N.Y.
49. Metropolitan Life Insurance Company  
School Health Bureau  
1 Madison Ave.  
New York, N.Y.
50. Muscular Dystrophy Associations of America  
1790 Broadway  
New York, N.Y.
51. National Association for Mental Health  
10 Columbus Circle  
New York, N.Y.
52. National Board of Fire Underwriters  
85 John St.  
New York, N.Y.
53. National Commission on Safety Education  
National Education Association  
1201 Sixteenth St., N.W.  
Washington, D.C.
54. National Congress of Parents and Teachers  
700 N. Rush St.  
Chicago, Ill.
55. National Council on Alcoholism  
2 East 103rd St.  
New York, N.Y.
56. National Cystic Fibrosis Research Foundation  
521 Fifth Ave.  
New York, N.Y.

57. National Dairy Council  
111 North Canal St.  
Chicago, Ill.
58. National Education Association  
1201 Sixteenth St., N.W.  
Washington, D.C.
59. National Epilepsy League  
130 N. Wells St.  
Chicago, Ill.
60. National Foundation  
800 Second Ave.  
New York, N.Y.
61. National Health Council  
1790 Broadway  
New York, N.Y.
62. National Health Education Committee  
135 East 42nd St.  
New York, N.Y.
63. National League for Nursing  
59th St. and Columbus Circle  
New York, N.Y.
64. National Livestock and Meat Board  
36 S. Wabash Ave.  
Chicago, Ill.
65. National Medical Foundation for Eye Care  
250 W. 57th St.  
New York, N.Y.
66. National Multiple Sclerosis Society  
270 Park Ave.  
New York, N.Y.
67. National Rifle Association  
1600 Rhode Island Ave.  
Washington, D.C.
68. National Safety Council  
425 N. Michigan Ave.  
Chicago, Ill.
69. National Society for Crippled Children and Adults  
2023 W. Ogden Ave.  
Chicago, Ill.
70. National Society for the Prevention of Blindness  
16 East 40th St.  
New York, N.Y.
71. National Tuberculosis Association  
1790 Broadway  
New York, N.Y.
72. Nutrition Foundation, Inc.  
99 Park Ave.  
New York, N.Y.
73. Personal Products Corporation  
Educational Department  
Milltown, N.J.
74. Planned Parenthood Federation of America  
501 Madison Ave.  
New York, N.Y.
75. Procter and Gamble Company  
P. O. Box 599  
Cincinnati, Ohio
76. Public Affairs Committee  
22 E. 38th St.  
New York, N.Y.
77. Science Research Associates  
57 W. Grand Ave.  
Chicago, Ill.
78. Tampax, Inc.  
161 E. 42nd St.  
New York, N.Y.
79. United Cerebral Palsy Association  
369 Lexington Ave.  
New York, N.Y.
80. Bureau of Human Nutrition and Home Economics  
Department of Agriculture  
Washington, D.C.
81. Children's Bureau  
Department of Health, Education, and Welfare  
Washington, D.C.
82. U.S. Government Printing Office  
Division of Public Documents  
Washington, D.C.
83. U.S. Office of Education  
Department of Health, Education and Welfare  
Washington, D.C.
84. U.S. Public Health Service  
Department of Health, Education and Welfare  
Washington, D.C.
85. Wheat Flour Institute  
309 W. Jackson Blvd.  
Chicago, Ill.
86. World Health Organization  
Palais des Nations  
Geneva, Switzerland



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